SEQUENCE LISTING

<110>   NAKAMURA, Norimasa; MATSUDA, Hikaru; SAWA, Yoshiki; TAKETANI, Satoshi;MIYAGAWA, Shigeru; YOSHIKAWA, Hideki; ANDO, Wataru

<120> SCAFFOLD-FREE SELF-ORGANIZED 3D SYNTHETIC TISSUE

<130> NKM001PCT

<160> 30

<170> PatentIn version 3.2

<210> 1
<211> 6085
<212> DNA
<213> Homo sapiens

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<221> CDS
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actcccaggc tacatcttct cacttgctaa caaggacctc tgagttcagc agcc atg     117
                                                            Met
                                                            1

agt tca gac tca gaa ttg gct gtt ttt ggg gag gct gct cct ttc ctc     165
Ser Ser Asp Ser Glu Leu Ala Val Phe Gly Glu Ala Ala Pro Phe Leu
         5                   10                  15

cga aag tct gaa agg gag cgc att gag gcc cag aat agg ccc ttt gat     213
Arg Lys Ser Glu Arg Glu Arg Ile Glu Ala Gln Asn Arg Pro Phe Asp
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                 20                  25                  30

gcc aaa aca tct gtc ttt gtg gcg gag ccc aaa gaa tcc ttt gtc aaa        261
Ala Lys Thr Ser Val Phe Val Ala Glu Pro Lys Glu Ser Phe Val Lys
     35                  40                  45

ggg acc atc cag agc aga gaa gga gga aaa gtg acg gtg aag act gag        309
Gly Thr Ile Gln Ser Arg Glu Gly Gly Lys Val Thr Val Lys Thr Glu
50                  55                  60                  65

gga gga gcg act ctg aca gtg aag gat gat cag gtc ttc ccc atg aac        357
Gly Gly Ala Thr Leu Thr Val Lys Asp Asp Gln Val Phe Pro Met Asn
                 70                  75                  80

cct ccc aaa tat gac aag atc gag gat atg gcc atg atg act cat ctg        405
Pro Pro Lys Tyr Asp Lys Ile Glu Asp Met Ala Met Met Thr His Leu
                 85                  90                  95

cat gag cct gct gtg ctg tac aac ctc aaa gaa cgt tat gca gcc tgg        453
His Glu Pro Ala Val Leu Tyr Asn Leu Lys Glu Arg Tyr Ala Ala Trp
             100                 105                 110

atg atc tac acc tat tca ggt ctc ttc tgt gtc act gtc aac ccc tac        501
Met Ile Tyr Thr Tyr Ser Gly Leu Phe Cys Val Thr Val Asn Pro Tyr
     115                 120                 125

aag tgg ctg cct gtg tat aag ccc gag gtg gtg aca gcc tac cga ggc        549
Lys Trp Leu Pro Val Tyr Lys Pro Glu Val Val Thr Ala Tyr Arg Gly
130                 135                 140                 145

aaa aag cgc cag ggg gcc ccg ccc cac atc ttc tcc atc tct gac aac        597
Lys Lys Arg Gln Gly Ala Pro Pro His Ile Phe Ser Ile Ser Asp Asn
                 150                 155                 160

gcc tat cag ttc atg ctg act gac cga gag aat cag tca atc ctg atc        645
Ala Tyr Gln Phe Met Leu Thr Asp Arg Glu Asn Gln Ser Ile Leu Ile
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                165                    170                    175

act gga gaa tct ggt gca ggg aag act gtg aac acc aag cgt gtc atc        693
Thr Gly Glu Ser Gly Ala Gly Lys Thr Val Asn Thr Lys Arg Val Ile
        180                    185                    190

cag tac ttt gca aca att gca gtt act ggt gag aag aag aag gaa gaa        741
Gln Tyr Phe Ala Thr Ile Ala Val Thr Gly Glu Lys Lys Lys Glu Glu
        195                    200                    205

att act tct ggc aaa ata cag ggg act ctg gaa gat caa atc atc agt        789
Ile Thr Ser Gly Lys Ile Gln Gly Thr Leu Glu Asp Gln Ile Ile Ser
210                    215                    220                    225

gcc aac ccc cta ctg gag gcc ttt ggc aac gcc aag acc gtg agg aat        837
Ala Asn Pro Leu Leu Glu Ala Phe Gly Asn Ala Lys Thr Val Arg Asn
                230                    235                    240

gac aac tcc tct cgc ttt ggt aaa ttc atc aga atc cac ttt ggc act        885
Asp Asn Ser Ser Arg Phe Gly Lys Phe Ile Arg Ile His Phe Gly Thr
                245                    250                    255

act gga aaa ctg gca tct gct gat att gaa aca tat ctg cta gag aag        933
Thr Gly Lys Leu Ala Ser Ala Asp Ile Glu Thr Tyr Leu Leu Glu Lys
        260                    265                    270

tct aga gtt gtt ttc cag ctt aag gct gag aga agt tat cat att ttt        981
Ser Arg Val Val Phe Gln Leu Lys Ala Glu Arg Ser Tyr His Ile Phe
        275                    280                    285

tac cag att aca tcg aat aag aaa cca gaa ctt att gaa atg ctt ctg       1029
Tyr Gln Ile Thr Ser Asn Lys Lys Pro Glu Leu Ile Glu Met Leu Leu
290                    295                    300                    305

att acc acg aac cca tat gat tac cca ttt gtc agt caa ggg gag atc       1077
Ile Thr Thr Asn Pro Tyr Asp Tyr Pro Phe Val Ser Gln Gly Glu Ile
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　　　　　　　　　　310　　　　　　　　　315　　　　　　　　　320

agt gtg gcc agc atc gat gat cag gaa gaa ctg atg gcc aca gat agt　　1125
Ser Val Ala Ser Ile Asp Asp Gln Glu Glu Leu Met Ala Thr Asp Ser
　　　　　325　　　　　　　　　330　　　　　　　　　335

gct att gat att ttg ggc ttt act aat gaa gaa aag gtc tcc att tac　　1173
Ala Ile Asp Ile Leu Gly Phe Thr Asn Glu Glu Lys Val Ser Ile Tyr
　　　　　340　　　　　　　　　345　　　　　　　　　350

aag ctc acg ggg gct gtg atg cat tat ggg aac cta aaa ttt aag caa　　1221
Lys Leu Thr Gly Ala Val Met His Tyr Gly Asn Leu Lys Phe Lys Gln
　　　　　355　　　　　　　　　360　　　　　　　　　365

aag cag cgt gag gag caa gca gag cca gat ggc aca gaa gtt gct gac　　1269
Lys Gln Arg Glu Glu Gln Ala Glu Pro Asp Gly Thr Glu Val Ala Asp
370　　　　　　　　　375　　　　　　　　　380　　　　　　　　　385

aag gcg gcc tac ctc cag agt ctg aac tct gca gat ctg ctc aaa gct　　1317
Lys Ala Ala Tyr Leu Gln Ser Leu Asn Ser Ala Asp Leu Leu Lys Ala
　　　　　　　　　390　　　　　　　　　395　　　　　　　　　400

ctc tgc tac ccc agg gtc aag gtc ggc aat gag tat gtc acc aaa ggc　　1365
Leu Cys Tyr Pro Arg Val Lys Val Gly Asn Glu Tyr Val Thr Lys Gly
　　　　　　　　405　　　　　　　　　410　　　　　　　　　415

cag act gta gaa cag gtg tcc aac gca gta ggt gct ctg gcc aaa gcc　　1413
Gln Thr Val Glu Gln Val Ser Asn Ala Val Gly Ala Leu Ala Lys Ala
　　　　　　　420　　　　　　　　　425　　　　　　　　　430

gtc tac gag aag atg ttc ctg tgg atg gtt gcc cgc atc aac cag cag　　1461
Val Tyr Glu Lys Met Phe Leu Trp Met Val Ala Arg Ile Asn Gln Gln
　　　　　435　　　　　　　　　440　　　　　　　　　445

ctg gac acc aag cag ccc agg cag tac ttc atc ggg gtc ttg gac att　　1509
Leu Asp Thr Lys Gln Pro Arg Gln Tyr Phe Ile Gly Val Leu Asp Ile

    450   455   460   465

gct ggt ttt gag att ttt gat ttc aac agc ctg gag cag ctg tgc atc   1557
Ala Gly Phe Glu Ile Phe Asp Phe Asn Ser Leu Glu Gln Leu Cys Ile
                470   475   480

aac ttc acc aat gag aaa ctg caa cag ttt ttc aac cac cac atg ttc   1605
Asn Phe Thr Asn Glu Lys Leu Gln Gln Phe Phe Asn His His Met Phe
                485   490   495

gtg ctg gag cag gag gag tac aag aag gaa ggc atc gag tgg acg ttc   1653
Val Leu Glu Gln Glu Glu Tyr Lys Lys Glu Gly Ile Glu Trp Thr Phe
                500   505   510

atc gac ttc ggg atg gac ctg gct gcc tgc atc gag ctc atc gag aag   1701
Ile Asp Phe Gly Met Asp Leu Ala Ala Cys Ile Glu Leu Ile Glu Lys
                515   520   525

cct atg ggc atc ttc tcc atc ctg gaa gag gag tgc atg ttc cct aag   1749
Pro Met Gly Ile Phe Ser Ile Leu Glu Glu Glu Cys Met Phe Pro Lys
530   535   540   545

gca aca gac acc tcc ttc aag aac aag ctg tat gac cag cac ctg ggc   1797
Ala Thr Asp Thr Ser Phe Lys Asn Lys Leu Tyr Asp Gln His Leu Gly
                550   555   560

aag tct gcc aac ttc cag aag ccc aag gtg gtc aaa ggc aag gcc gag   1845
Lys Ser Ala Asn Phe Gln Lys Pro Lys Val Val Lys Gly Lys Ala Glu
                565   570   575

gcc cac ttc gct ctg att cac tat gct ggt gtt gtg gac tac aac att   1893
Ala His Phe Ala Leu Ile His Tyr Ala Gly Val Val Asp Tyr Asn Ile
                580   585   590

act ggc tgg ctg gag aag aac aag gac ccc ctg aat gag acc gtg gtt   1941
Thr Gly Trp Leu Glu Lys Asn Lys Asp Pro Leu Asn Glu Thr Val Val

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            595                     600                     605


gga ctg tac cag aag tct gca atg aaa act cta gct cag ctc ttc tct        1989
Gly Leu Tyr Gln Lys Ser Ala Met Lys Thr Leu Ala Gln Leu Phe Ser
610                 615                 620                 625


ggg gct caa act gct gaa gga gag gga gct ggc gga ggg gcc aag aaa        2037
Gly Ala Gln Thr Ala Glu Gly Glu Gly Ala Gly Gly Gly Ala Lys Lys
                630                 635                 640


ggt ggt aag aag aag ggc tct tct ttc cag aca gtg tct gcc ctt ttc        2085
Gly Gly Lys Lys Lys Gly Ser Ser Phe Gln Thr Val Ser Ala Leu Phe
                645                 650                 655


aga gag aat ttg aac aag ctg atg acc aac ctc agg agt acc cat cct        2133
Arg Glu Asn Leu Asn Lys Leu Met Thr Asn Leu Arg Ser Thr His Pro
                660                 665                 670


cac ttt gtg agg tgt atc atc ccc aat gag aca aaa act cct ggt gcc        2181
His Phe Val Arg Cys Ile Ile Pro Asn Glu Thr Lys Thr Pro Gly Ala
675                 680                 685


atg gag cat gag ctt gtc ctc cac cag ctg agg tgt aac ggt gtg ctg        2229
Met Glu His Glu Leu Val Leu His Gln Leu Arg Cys Asn Gly Val Leu
690                 695                 700                 705


gaa ggc atc cgc atc tgt agg aaa gga ttt cca agc aga atc ctt tat        2277
Glu Gly Ile Arg Ile Cys Arg Lys Gly Phe Pro Ser Arg Ile Leu Tyr
                710                 715                 720


gca gac ttc aaa cag aga tac aag gta tta aat gca agt gca atc cct        2325
Ala Asp Phe Lys Gln Arg Tyr Lys Val Leu Asn Ala Ser Ala Ile Pro
                725                 730                 735


gaa ggg caa ttc att gat agc aag aag gcc tct gag aag ctc ctt gca        2373
Glu Gly Gln Phe Ile Asp Ser Lys Lys Ala Ser Glu Lys Leu Leu Ala
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                    740   745   750

tcc atc gac att gac cac acc cag tat aaa ttt ggg cac acc aag gtc   2421
Ser Ile Asp Ile Asp His Thr Gln Tyr Lys Phe Gly His Thr Lys Val
    755   760   765

ttt ttc aaa gct ggt ctt ctg ggg ctc cta gag gag atg cga gat gac   2469
Phe Phe Lys Ala Gly Leu Leu Gly Leu Leu Glu Glu Met Arg Asp Asp
770   775   780   785

aag ctg gcc cag ctg att acc cga acc cag gcc agg tgc aga ggg ttc   2517
Lys Leu Ala Gln Leu Ile Thr Arg Thr Gln Ala Arg Cys Arg Gly Phe
                    790   795   800

ttg gca aga gtg gag tac cag agg atg gtg gag aga agg gag gcc atc   2565
Leu Ala Arg Val Glu Tyr Gln Arg Met Val Glu Arg Arg Glu Ala Ile
                    805   810   815

ttc tgt atc cag tac aat atc aga tcc ttc atg aat gtc aag cac tgg   2613
Phe Cys Ile Gln Tyr Asn Ile Arg Ser Phe Met Asn Val Lys His Trp
                    820   825   830

ccc tgg atg aaa ctc ttc ttc aag atc aag cct ctg ttg aag agt gca   2661
Pro Trp Met Lys Leu Phe Phe Lys Ile Lys Pro Leu Leu Lys Ser Ala
                    835   840   845

gaa act gag aag gag atg gcc acc atg aag gaa gaa ttt cag aaa att   2709
Glu Thr Glu Lys Glu Met Ala Thr Met Lys Glu Glu Phe Gln Lys Ile
850   855   860   865

aaa gac gaa ctt gcc aag tca gag gca aaa agg aag gaa ctg gaa gaa   2757
Lys Asp Glu Leu Ala Lys Ser Glu Ala Lys Arg Lys Glu Leu Glu Glu
                    870   875   880

aag atg gtg acg ctg ttg aaa gaa aaa aat gac ttg cag ctc caa gtt   2805
Lys Met Val Thr Leu Leu Lys Glu Lys Asn Asp Leu Gln Leu Gln Val

885   890   895

cag gct gaa gcc gaa ggc ttg gct gat gca gag gaa agg tgt gac cag   2853
Gln Ala Glu Ala Glu Gly Leu Ala Asp Ala Glu Glu Arg Cys Asp Gln
         900   905   910

cta atc aaa acc aaa atc cag cta gaa gcc aaa atc aaa gag gtg act   2901
Leu Ile Lys Thr Lys Ile Gln Leu Glu Ala Lys Ile Lys Glu Val Thr
         915   920   925

gag aga gct gag gat gag gaa gag atc aat gct gag ctg aca gcc aag   2949
Glu Arg Ala Glu Asp Glu Glu Glu Ile Asn Ala Glu Leu Thr Ala Lys
930   935   940   945

aag agg aaa ctg gag gat gaa tgt tca gaa ctc aag aaa gac att gat   2997
Lys Arg Lys Leu Glu Asp Glu Cys Ser Glu Leu Lys Lys Asp Ile Asp
         950   955   960

gac ctt gag ctg aca ctg gcc aag gtt gag aag gag aaa cat gcc aca   3045
Asp Leu Glu Leu Thr Leu Ala Lys Val Glu Lys Glu Lys His Ala Thr
              965   970   975

gaa aac aag gtg aaa aac ctc aca gaa gag atg gca ggt ctg gat gaa   3093
Glu Asn Lys Val Lys Asn Leu Thr Glu Glu Met Ala Gly Leu Asp Glu
         980   985   990

acc att gct aag ctg acc aag gag aag aag gct ctc cag gag gcc cac   3141
Thr Ile Ala Lys Leu Thr Lys Glu Lys Lys Ala Leu Gln Glu Ala His
         995   1000   1005

cag cag acc ctg gat gac ctg cag gca gag gag gac aaa gtc aac   3186
Gln Gln Thr Leu Asp Asp Leu Gln Ala Glu Glu Asp Lys Val Asn
1010   1015   1020

acc ctg acc aaa gct aaa atc aaa ctt gaa caa caa gtg gat gat   3231
Thr Leu Thr Lys Ala Lys Ile Lys Leu Glu Gln Gln Val Asp Asp

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              1025                    1030                        1035


        ctt  gaa ggg tcc ttg gag  caa gaa aag aaa ctt  cgc atg gac cta      3276
        Leu  Glu Gly Ser Leu Glu  Gln Glu Lys Lys Leu  Arg Met Asp Leu
        1040                1045                     1050


        gaa  agg gct aag agg aaa  ctt gag ggt gac ttg  aag ttg gcc caa      3321
        Glu  Arg Ala Lys Arg Lys  Leu Glu Gly Asp Leu  Lys Leu Ala Gln
        1055                1060                     1065


        gaa  tcc ata atg gac att  gaa aat gag aaa cag  caa ctt gat gaa      3366
        Glu  Ser Ile Met Asp Ile  Glu Asn Glu Lys Gln  Gln Leu Asp Glu
        1070                1075                     1080


        aag  ctc aaa aag aaa gag  ttt gaa atc agc aat  ctg caa agc aag      3411
        Lys  Leu Lys Lys Lys Glu  Phe Glu Ile Ser Asn  Leu Gln Ser Lys
        1085                1090                     1095


        att  gaa gat gaa cag gca  ctt ggc att caa ttg  cag aag aaa att      3456
        Ile  Glu Asp Glu Gln Ala  Leu Gly Ile Gln Leu  Gln Lys Lys Ile
        1100                1105                     1110


        aaa  gaa ttg caa gcc cgc  att gag gag ctg gag  gag gaa atc gag      3501
        Lys  Glu Leu Gln Ala Arg  Ile Glu Glu Leu Glu  Glu Glu Ile Glu
        1115                1120                     1125


        gca  gag cgg gcc tcc cgg  gcc aaa gca gag aag  cag cgc tct gac      3546
        Ala  Glu Arg Ala Ser Arg  Ala Lys Ala Glu Lys  Gln Arg Ser Asp
        1130                1135                     1140


        ctc  tcc cgg gag ctg gag  gag atc agc gag agg  ctg gaa gaa gcc      3591
        Leu  Ser Arg Glu Leu Glu  Glu Ile Ser Glu Arg  Leu Glu Glu Ala
        1145                1150                     1155


        ggt  ggg gcc act tca gcc  cag att gag atg aac  aag aag cgg gag      3636
        Gly  Gly Ala Thr Ser Ala  Gln Ile Glu Met Asn  Lys Lys Arg Glu
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1160   1165   1170

gct gag ttc cag aaa atg cgc agg gac ctg gag gag gcc acc cta   3681
Ala Glu Phe Gln Lys Met Arg Arg Asp Leu Glu Glu Ala Thr Leu
1175   1180   1185

cag cat gaa gcc aca gcg gcc acc ctg agg aag aag cat gca gat   3726
Gln His Glu Ala Thr Ala Ala Thr Leu Arg Lys Lys His Ala Asp
1190   1195   1200

agt gtg gcc gag ctt ggg gag cag att gac aac ctg cag cga gtg   3771
Ser Val Ala Glu Leu Gly Glu Gln Ile Asp Asn Leu Gln Arg Val
1205   1210   1215

aag cag aag ctg gag aag gag aag agt gag atg aag atg gag att   3816
Lys Gln Lys Leu Glu Lys Glu Lys Ser Glu Met Lys Met Glu Ile
1220   1225   1230

gat gac ctt gct agt aat gta gaa acg gtc tcc aaa gcc aag gga   3861
Asp Asp Leu Ala Ser Asn Val Glu Thr Val Ser Lys Ala Lys Gly
1235   1240   1245

aac cta gag aaa atg tgc cgg act cta gag gac caa ctg agt gaa   3906
Asn Leu Glu Lys Met Cys Arg Thr Leu Glu Asp Gln Leu Ser Glu
1250   1255   1260

ctg aaa tca aag gaa gag gag cag cag cgg ctg atc aat gac ctg   3951
Leu Lys Ser Lys Glu Glu Glu Gln Gln Arg Leu Ile Asn Asp Leu
1265   1270   1275

act gcg cag agg ggg cgc ctg cag act gaa tct ggt gag ttt tca   3996
Thr Ala Gln Arg Gly Arg Leu Gln Thr Glu Ser Gly Glu Phe Ser
1280   1285   1290

cgc cag ctt gat gaa aag gaa gct ctg gtg tct cag tta tca aga   4041
Arg Gln Leu Asp Glu Lys Glu Ala Leu Val Ser Gln Leu Ser Arg

1295   1300   1305

ggc aaa caa gcc ttt act caa cag att gaa gaa tta aag agg caa   4086
Gly Lys Gln Ala Phe Thr Gln Gln Ile Glu Glu Leu Lys Arg Gln
1310   1315   1320

ctt gaa gag gag ata aaa gcc aag aac gcc ctg gcg cat gcc ctg   4131
Leu Glu Glu Glu Ile Lys Ala Lys Asn Ala Leu Ala His Ala Leu
1325   1330   1335

cag tct tcc cgc cac gac tgt gac ctg ctg cgg gaa cag tat gag   4176
Gln Ser Ser Arg His Asp Cys Asp Leu Leu Arg Glu Gln Tyr Glu
1340   1345   1350

gag gag cag gaa tcc aag gcc gag ctg cag aga gca ctg tcc aag   4221
Glu Glu Gln Glu Ser Lys Ala Glu Leu Gln Arg Ala Leu Ser Lys
1355   1360   1365

gcc aac acc gag gtt gcc caa tgg agg acc aaa tac gag acg gac   4266
Ala Asn Thr Glu Val Ala Gln Trp Arg Thr Lys Tyr Glu Thr Asp
1370   1375   1380

gcc atc cag cgc aca gag gag ctg gag gag gcc aag aag aag ctg   4311
Ala Ile Gln Arg Thr Glu Glu Leu Glu Glu Ala Lys Lys Lys Leu
1385   1390   1395

gcc cag cgg ctg cag gca gct gag gaa cat gta gaa gct gtg aac   4356
Ala Gln Arg Leu Gln Ala Ala Glu Glu His Val Glu Ala Val Asn
1400   1405   1410

gcc aaa tgt gct tcc ctc gaa aag acg aag cag cgg ctg cag aat   4401
Ala Lys Cys Ala Ser Leu Glu Lys Thr Lys Gln Arg Leu Gln Asn
1415   1420   1425

gag gtc gag gac ctc atg ctt gat gtg gag agg aca aat gcc gcc   4446
Glu Val Glu Asp Leu Met Leu Asp Val Glu Arg Thr Asn Ala Ala

1430   1435   1440

tgt gcc gcc ctt gac aaa   aag caa agg aac ttc   gat aag atc ctg   4491
Cys Ala Ala Leu Asp Lys   Lys Gln Arg Asn Phe   Asp Lys Ile Leu
1445   1450   1455

gca gaa tgg aaa cag aaa   tgt gag gaa acg cat   gct gag ctt gag   4536
Ala Glu Trp Lys Gln Lys   Cys Glu Glu Thr His   Ala Glu Leu Glu
1460   1465   1470

gcc tcc cag aag gag gcc   cgt tcc ctt ggc act   gag ctg ttc aag   4581
Ala Ser Gln Lys Glu Ala   Arg Ser Leu Gly Thr   Glu Leu Phe Lys
1475   1480   1485

ata aag aat gcc tat gag   gaa tct ttg gat cag   cta gaa acc ctg   4626
Ile Lys Asn Ala Tyr Glu   Glu Ser Leu Asp Gln   Leu Glu Thr Leu
1490   1495   1500

aag cga gag aac aaa aac   tta cag cag gag att   tct gac ctc acg   4671
Lys Arg Glu Asn Lys Asn   Leu Gln Gln Glu Ile   Ser Asp Leu Thr
1505   1510   1515

gaa cag att gca gaa gga   ggg aaa cgt atc cat   gaa ctg gag aaa   4716
Glu Gln Ile Ala Glu Gly   Gly Lys Arg Ile His   Glu Leu Glu Lys
1520   1525   1530

ata aag aaa caa gtg gaa   caa gaa aag tgt gaa   ctt cag gct gct   4761
Ile Lys Lys Gln Val Glu   Gln Glu Lys Cys Glu   Leu Gln Ala Ala
1535   1540   1545

tta gaa gaa gca gag gca   tct ctt gaa cat gaa   gag gga aag atc   4806
Leu Glu Glu Ala Glu Ala   Ser Leu Glu His Glu   Glu Gly Lys Ile
1550   1555   1560

ctg cgc atc cag ctt gag   ttg aac caa gtc aag   tct gag gtt gat   4851
Leu Arg Ile Gln Leu Glu   Leu Asn Gln Val Lys   Ser Glu Val Asp

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        1565                1570                    1575

agg  aaa att gct gaa aaa  gat gag gaa att gac  cag ctg aag aga       4896
Arg  Lys Ile Ala Glu Lys  Asp Glu Glu Ile Asp  Gln Leu Lys Arg
1580                1585                    1590


aac  cac att aga atc gtg  gag tcc atg cag agc  acg ctg gat gct       4941
Asn  His Ile Arg Ile Val  Glu Ser Met Gln Ser  Thr Leu Asp Ala
1595                1600                    1605


gag  atc agg agt agg aat  gat gcc att agg ctc  aag aag aag atg       4986
Glu  Ile Arg Ser Arg Asn  Asp Ala Ile Arg Leu  Lys Lys Lys Met
1610                1615                    1620


gag  gga gac ctc aat gaa  atg gaa atc cag ctg  aac cat gcc aac       5031
Glu  Gly Asp Leu Asn Glu  Met Glu Ile Gln Leu  Asn His Ala Asn
1625                1630                    1635


cgc  atg gct gct gag gcc  ctg agg aac tac agg  aac acc caa ggc       5076
Arg  Met Ala Ala Glu Ala  Leu Arg Asn Tyr Arg  Asn Thr Gln Gly
1640                1645                    1650


atc  ctc aag gat acc cag  atc cac ctg gat gat  gct ctc cgg agc       5121
Ile  Leu Lys Asp Thr Gln  Ile His Leu Asp Asp  Ala Leu Arg Ser
1655                1660                    1665


cag  gag gac ctg aag gaa  cag ctg gcc atg gtg  gag cgc aga gcc       5166
Gln  Glu Asp Leu Lys Glu  Gln Leu Ala Met Val  Glu Arg Arg Ala
1670                1675                    1680


aac  ctg ctg cag gct gag  atc gag gag ctg cgg  gcc act ctg gaa       5211
Asn  Leu Leu Gln Ala Glu  Ile Glu Glu Leu Arg  Ala Thr Leu Glu
1685                1690                    1695


cag  aca gag agg agc aga  aaa atc gca gaa cag  gag ctc ctg gat       5256
Gln  Thr Glu Arg Ser Arg  Lys Ile Ala Glu Gln  Glu Leu Leu Asp
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1700   1705   1710

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gcc  agt gag cgt gtt cag  cta ctg cac acc cag  aac acc agc ctg        5301
Ala  Ser Glu Arg Val Gln  Leu Leu His Thr Gln  Asn Thr Ser Leu
1715                      1720                 1725
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atc  aac acc aag aag aag  ctg gag aca gat att  tcc caa atg caa        5346
Ile  Asn Thr Lys Lys Lys  Leu Glu Thr Asp Ile  Ser Gln Met Gln
1730                      1735                 1740
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```
gga  gag atg gag gac att  ctc cag gaa gcc cgc  aat gca gaa gaa        5391
Gly  Glu Met Glu Asp Ile  Leu Gln Glu Ala Arg  Asn Ala Glu Glu
1745                      1750                 1755
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```
aag  gcc aag aag gcc atc  act gat gcc gcc atg  atg gct gag gag        5436
Lys  Ala Lys Lys Ala Ile  Thr Asp Ala Ala Met  Met Ala Glu Glu
1760                      1765                 1770
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```
ctg  aag aag gag cag gac  acc agc gcc cac ctg  gag cgg atg aag        5481
Leu  Lys Lys Glu Gln Asp  Thr Ser Ala His Leu  Glu Arg Met Lys
1775                      1780                 1785
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```
aag  aac atg gag cag acc  gtg aag gat ctg cag  ctc cgt ctg gat        5526
Lys  Asn Met Glu Gln Thr  Val Lys Asp Leu Gln  Leu Arg Leu Asp
1790                      1795                 1800
```

```
gag  gct gag cag ctg gcc  ctg aag ggt ggg aag  aag cag atc cag        5571
Glu  Ala Glu Gln Leu Ala  Leu Lys Gly Gly Lys  Lys Gln Ile Gln
1805                      1810                 1815
```

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aaa  ctg gag gcc agg gta  cgg gag ctg gaa gga  gag gtt gag agt        5616
Lys  Leu Glu Ala Arg Val  Arg Glu Leu Glu Gly  Glu Val Glu Ser
1820                      1825                 1830
```

```
gag  caa aag cgt aat gct  gag gct gtc aaa ggt  ctg cgc aaa cat        5661
Glu  Gln Lys Arg Asn Ala  Glu Ala Val Lys Gly  Leu Arg Lys His
```

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              1835                    1840                      1845


     gag  agg cga gtg aag gaa   ctc act tac cag acg   gaa gaa gat aga        5706
     Glu  Arg Arg Val Lys Glu   Leu Thr Tyr Gln Thr   Glu Glu Asp Arg
     1850                    1855                  1860


     aag  aat att ctc agg ctt   caa gat ttg gta gat   aaa ctt cag gca        5751
     Lys  Asn Ile Leu Arg Leu   Gln Asp Leu Val Asp   Lys Leu Gln Ala
     1865                    1870                  1875


     aaa  gtg aaa tct tat aag   aga caa gct gag gag   gct gag gaa caa        5796
     Lys  Val Lys Ser Tyr Lys   Arg Gln Ala Glu Glu   Ala Glu Glu Gln
     1880                    1885                  1890


     tcc  aac acc aat cta gct   aaa ttc cgc aag ctc   cag cat gag ctg        5841
     Ser  Asn Thr Asn Leu Ala   Lys Phe Arg Lys Leu   Gln His Glu Leu
     1895                    1900                  1905


     gag  gag gcc gag gaa cgg   gct gac att gct gag   tcc cag gtg aac        5886
     Glu  Glu Ala Glu Glu Arg   Ala Asp Ile Ala Glu   Ser Gln Val Asn
     1910                    1915                  1920


     aaa  ctg cgg gtg aag agc   cgg gag gtt cac aca   aaa gtc ata agt        5931
     Lys  Leu Arg Val Lys Ser   Arg Glu Val His Thr   Lys Val Ile Ser
     1925                    1930                  1935


     gaa  gag tga tcatgtcctg atgccatgga atgactgaag acaggcacaa              5980
     Glu  Glu
     1940


aatgtgacat ctttggtcat ttccctctgt aattattgtg tattctaccc tgttgcaaag        6040


gaaataaagc atagggtagt ttgcaaacaa aaaaaaaaaa aaaaa                        6085
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<211> 1941
<212> PRT
<213> Homo sapiens

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Met Ser Ser Asp Ser Glu Leu Ala Val Phe Gly Glu Ala Ala Pro Phe
1   5   10   15

Leu Arg Lys Ser Glu Arg Glu Arg Ile Glu Ala Gln Asn Arg Pro Phe
            20   25   30

Asp Ala Lys Thr Ser Val Phe Val Ala Glu Pro Lys Glu Ser Phe Val
            35   40   45

Lys Gly Thr Ile Gln Ser Arg Glu Gly Gly Lys Val Thr Val Lys Thr
        50   55   60

Glu Gly Gly Ala Thr Leu Thr Val Lys Asp Asp Gln Val Phe Pro Met
65   70   75   80

Asn Pro Pro Lys Tyr Asp Lys Ile Glu Asp Met Ala Met Met Thr His
                85   90   95

Leu His Glu Pro Ala Val Leu Tyr Asn Leu Lys Glu Arg Tyr Ala Ala
                100   105   110

Trp Met Ile Tyr Thr Tyr Ser Gly Leu Phe Cys Val Thr Val Asn Pro
            115   120   125

Tyr Lys Trp Leu Pro Val Tyr Lys Pro Glu Val Val Thr Ala Tyr Arg
    130   135   140

Gly Lys Lys Arg Gln Gly Ala Pro Pro His Ile Phe Ser Ile Ser Asp
145   150   155   160

Asn Ala Tyr Gln Phe Met Leu Thr Asp Arg Glu Asn Gln Ser Ile Leu
                165   170   175

Ile Thr Gly Glu Ser Gly Ala Gly Lys Thr Val Asn Thr Lys Arg Val
                180   185   190

Ile Gln Tyr Phe Ala Thr Ile Ala Val Thr Gly Glu Lys Lys Lys Glu
                195   200   205

Glu Ile Thr Ser Gly Lys Ile Gln Gly Thr Leu Glu Asp Gln Ile Ile
    210   215   220

Ser Ala Asn Pro Leu Leu Glu Ala Phe Gly Asn Ala Lys Thr Val Arg
225   230   235   240

Asn Asp Asn Ser Ser Arg Phe Gly Lys Phe Ile Arg Ile His Phe Gly
                245   250   255

Thr Thr Gly Lys Leu Ala Ser Ala Asp Ile Glu Thr Tyr Leu Leu Glu
                260   265   270

Lys Ser Arg Val Val Phe Gln Leu Lys Ala Glu Arg Ser Tyr His Ile
        275   280   285

Phe Tyr Gln Ile Thr Ser Asn Lys Lys Pro Glu Leu Ile Glu Met Leu
        290   295   300

Leu Ile Thr Thr Asn Pro Tyr Asp Tyr Pro Phe Val Ser Gln Gly Glu
305   310   315   320

Ile Ser Val Ala Ser Ile Asp Asp Gln Glu Glu Leu Met Ala Thr Asp
                325   330   335

Ser Ala Ile Asp Ile Leu Gly Phe Thr Asn Glu Glu Lys Val Ser Ile
                340   345   350

Tyr Lys Leu Thr Gly Ala Val Met His Tyr Gly Asn Leu Lys Phe Lys
        355   360   365

Gln Lys Gln Arg Glu Glu Gln Ala Glu Pro Asp Gly Thr Glu Val Ala
        370   375   380

Asp Lys Ala Ala Tyr Leu Gln Ser Leu Asn Ser Ala Asp Leu Leu Lys
385   390   395   400

Ala Leu Cys Tyr Pro Arg Val Lys Val Gly Asn Glu Tyr Val Thr Lys
                405   410   415

Gly Gln Thr Val Glu Gln Val Ser Asn Ala Val Gly Ala Leu Ala Lys
          420   425   430

Ala Val Tyr Glu Lys Met Phe Leu Trp Met Val Ala Arg Ile Asn Gln
          435   440   445

Gln Leu Asp Thr Lys Gln Pro Arg Gln Tyr Phe Ile Gly Val Leu Asp
          450   455   460

Ile Ala Gly Phe Glu Ile Phe Asp Phe Asn Ser Leu Glu Gln Leu Cys
465   470   475   480

Ile Asn Phe Thr Asn Glu Lys Leu Gln Gln Phe Phe Asn His His Met
          485   490   495

Phe Val Leu Glu Gln Glu Glu Tyr Lys Lys Glu Gly Ile Glu Trp Thr
          500   505   510

Phe Ile Asp Phe Gly Met Asp Leu Ala Ala Cys Ile Glu Leu Ile Glu
          515   520   525

Lys Pro Met Gly Ile Phe Ser Ile Leu Glu Glu Glu Cys Met Phe Pro
          530   535   540

Lys Ala Thr Asp Thr Ser Phe Lys Asn Lys Leu Tyr Asp Gln His Leu
545   550   555   560

Gly Lys Ser Ala Asn Phe Gln Lys Pro Lys Val Val Lys Gly Lys Ala
            565   570   575

Glu Ala His Phe Ala Leu Ile His Tyr Ala Gly Val Val Asp Tyr Asn
            580   585   590

Ile Thr Gly Trp Leu Glu Lys Asn Lys Asp Pro Leu Asn Glu Thr Val
            595   600   605

Val Gly Leu Tyr Gln Lys Ser Ala Met Lys Thr Leu Ala Gln Leu Phe
        610   615   620

Ser Gly Ala Gln Thr Ala Glu Gly Glu Gly Ala Gly Gly Gly Ala Lys
625   630   635   640

Lys Gly Gly Lys Lys Lys Gly Ser Ser Phe Gln Thr Val Ser Ala Leu
            645   650   655

Phe Arg Glu Asn Leu Asn Lys Leu Met Thr Asn Leu Arg Ser Thr His
            660   665   670

Pro His Phe Val Arg Cys Ile Ile Pro Asn Glu Thr Lys Thr Pro Gly
            675   680   685

Ala Met Glu His Glu Leu Val Leu His Gln Leu Arg Cys Asn Gly Val
        690   695   700

Leu Glu Gly Ile Arg Ile Cys Arg Lys Gly Phe Pro Ser Arg Ile Leu
705   710   715   720

Tyr Ala Asp Phe Lys Gln Arg Tyr Lys Val Leu Asn Ala Ser Ala Ile
                725   730   735

Pro Glu Gly Gln Phe Ile Asp Ser Lys Lys Ala Ser Glu Lys Leu Leu
                740   745   750

Ala Ser Ile Asp Ile Asp His Thr Gln Tyr Lys Phe Gly His Thr Lys
                755   760   765

Val Phe Phe Lys Ala Gly Leu Leu Gly Leu Leu Glu Glu Met Arg Asp
770   775   780

Asp Lys Leu Ala Gln Leu Ile Thr Arg Thr Gln Ala Arg Cys Arg Gly
785   790   795   800

Phe Leu Ala Arg Val Glu Tyr Gln Arg Met Val Glu Arg Arg Glu Ala
                805   810   815

Ile Phe Cys Ile Gln Tyr Asn Ile Arg Ser Phe Met Asn Val Lys His
                820   825   830

Trp Pro Trp Met Lys Leu Phe Phe Lys Ile Lys Pro Leu Leu Lys Ser
                835   840   845

Ala Glu Thr Glu Lys Glu Met Ala Thr Met Lys Glu Glu Phe Gln Lys
    850   855   860

Ile Lys Asp Glu Leu Ala Lys Ser Glu Ala Lys Arg Lys Glu Leu Glu
865   870   875   880

Glu Lys Met Val Thr Leu Leu Lys Glu Lys Asn Asp Leu Gln Leu Gln
                885   890   895

Val Gln Ala Glu Ala Glu Gly Leu Ala Asp Ala Glu Glu Arg Cys Asp
            900   905   910

Gln Leu Ile Lys Thr Lys Ile Gln Leu Glu Ala Lys Ile Lys Glu Val
            915   920   925

Thr Glu Arg Ala Glu Asp Glu Glu Glu Ile Asn Ala Glu Leu Thr Ala
    930   935   940

Lys Lys Arg Lys Leu Glu Asp Glu Cys Ser Glu Leu Lys Lys Asp Ile
945   950   955   960

Asp Asp Leu Glu Leu Thr Leu Ala Lys Val Glu Lys Glu Lys His Ala
            965   970   975

Thr Glu Asn Lys Val Lys Asn Leu Thr Glu Glu Met Ala Gly Leu Asp
        980   985   990

Glu Thr Ile Ala Lys Leu Thr Lys   Glu Lys Lys Ala Leu   Gln Glu Ala
     995   1000   1005

His Gln   Gln Thr Leu Asp Asp   Leu Gln Ala Glu Glu   Asp Lys Val
     1010   1015   1020

Asn Thr   Leu Thr Lys Ala Lys   Ile Lys Leu Glu Gln   Gln Val Asp
     1025   1030   1035

Asp Leu   Glu Gly Ser Leu Glu   Gln Glu Lys Lys Leu   Arg Met Asp
     1040   1045   1050

Leu Glu   Arg Ala Lys Arg Lys   Leu Glu Gly Asp Leu   Lys Leu Ala
     1055   1060   1065

Gln Glu   Ser Ile Met Asp Ile   Glu Asn Glu Lys Gln   Gln Leu Asp
     1070   1075   1080

Glu Lys   Leu Lys Lys Lys Glu   Phe Glu Ile Ser Asn   Leu Gln Ser
     1085   1090   1095

Lys Ile   Glu Asp Glu Gln Ala   Leu Gly Ile Gln Leu   Gln Lys Lys
     1100   1105   1110

Ile Lys   Glu Leu Gln Ala Arg   Ile Glu Glu Leu Glu   Glu Glu Ile
     1115   1120   1125

Glu Ala Glu Arg Ala Ser Arg Ala Lys Ala Glu Lys Gln Arg Ser
    1130   1135   1140

Asp Leu Ser Arg Glu Leu Glu Glu Ile Ser Glu Arg Leu Glu Glu
    1145   1150   1155

Ala Gly Gly Ala Thr Ser Ala Gln Ile Glu Met Asn Lys Lys Arg
    1160   1165   1170

Glu Ala Glu Phe Gln Lys Met Arg Arg Asp Leu Glu Glu Ala Thr
    1175   1180   1185

Leu Gln His Glu Ala Thr Ala Ala Thr Leu Arg Lys Lys His Ala
    1190   1195   1200

Asp Ser Val Ala Glu Leu Gly Glu Gln Ile Asp Asn Leu Gln Arg
    1205   1210   1215

Val Lys Gln Lys Leu Glu Lys Glu Lys Ser Glu Met Lys Met Glu
    1220   1225   1230

Ile Asp Asp Leu Ala Ser Asn Val Glu Thr Val Ser Lys Ala Lys
    1235   1240   1245

Gly Asn Leu Glu Lys Met Cys Arg Thr Leu Glu Asp Gln Leu Ser
    1250   1255   1260

Glu Leu Lys Ser Lys Glu Glu Glu Gln Gln Arg Leu Ile Asn Asp
    1265   1270   1275

Leu Thr Ala Gln Arg Gly Arg Leu Gln Thr Glu Ser Gly Glu Phe
    1280   1285   1290

Ser Arg Gln Leu Asp Glu Lys Glu Ala Leu Val Ser Gln Leu Ser
    1295   1300   1305

Arg Gly Lys Gln Ala Phe Thr Gln Gln Ile Glu Glu Leu Lys Arg
    1310   1315   1320

Gln Leu Glu Glu Glu Ile Lys Ala Lys Asn Ala Leu Ala His Ala
    1325   1330   1335

Leu Gln Ser Ser Arg His Asp Cys Asp Leu Leu Arg Glu Gln Tyr
    1340   1345   1350

Glu Glu Glu Gln Glu Ser Lys Ala Glu Leu Gln Arg Ala Leu Ser
    1355   1360   1365

Lys Ala Asn Thr Glu Val Ala Gln Trp Arg Thr Lys Tyr Glu Thr
    1370   1375   1380

Asp Ala Ile Gln Arg Thr Glu Glu Leu Glu Glu Ala Lys Lys Lys
    1385   1390   1395

Leu Ala Gln Arg Leu Gln Ala Ala Glu Glu His Val Glu Ala Val
     1400   1405   1410

Asn Ala Lys Cys Ala Ser Leu Glu Lys Thr Lys Gln Arg Leu Gln
     1415   1420   1425

Asn Glu Val Glu Asp Leu Met Leu Asp Val Glu Arg Thr Asn Ala
     1430   1435   1440

Ala Cys Ala Ala Leu Asp Lys Lys Gln Arg Asn Phe Asp Lys Ile
     1445   1450   1455

Leu Ala Glu Trp Lys Gln Lys Cys Glu Glu Thr His Ala Glu Leu
     1460   1465   1470

Glu Ala Ser Gln Lys Glu Ala Arg Ser Leu Gly Thr Glu Leu Phe
     1475   1480   1485

Lys Ile Lys Asn Ala Tyr Glu Glu Ser Leu Asp Gln Leu Glu Thr
     1490   1495   1500

Leu Lys Arg Glu Asn Lys Asn Leu Gln Gln Glu Ile Ser Asp Leu
     1505   1510   1515

Thr Glu Gln Ile Ala Glu Gly Gly Lys Arg Ile His Glu Leu Glu
     1520   1525   1530

Lys Ile Lys Lys Gln Val Glu Gln Glu Lys Cys Glu Leu Gln Ala
    1535   1540   1545

Ala Leu Glu Glu Ala Glu Ala Ser Leu Glu His Glu Glu Gly Lys
    1550   1555   1560

Ile Leu Arg Ile Gln Leu Glu Leu Asn Gln Val Lys Ser Glu Val
    1565   1570   1575

Asp Arg Lys Ile Ala Glu Lys Asp Glu Glu Ile Asp Gln Leu Lys
    1580   1585   1590

Arg Asn His Ile Arg Ile Val Glu Ser Met Gln Ser Thr Leu Asp
    1595   1600   1605

Ala Glu Ile Arg Ser Arg Asn Asp Ala Ile Arg Leu Lys Lys Lys
    1610   1615   1620

Met Glu Gly Asp Leu Asn Glu Met Glu Ile Gln Leu Asn His Ala
    1625   1630   1635

Asn Arg Met Ala Ala Glu Ala Leu Arg Asn Tyr Arg Asn Thr Gln
    1640   1645   1650

Gly Ile Leu Lys Asp Thr Gln Ile His Leu Asp Asp Ala Leu Arg
    1655   1660   1665

Ser Gln   Glu Asp Leu Lys Glu   Gln Leu Ala Met Val   Glu Arg Arg
    1670   1675   1680

Ala Asn   Leu Leu Gln Ala Glu   Ile Glu Glu Leu Arg   Ala Thr Leu
    1685   1690   1695

Glu Gln   Thr Glu Arg Ser Arg   Lys Ile Ala Glu Gln   Glu Leu Leu
    1700   1705   1710

Asp Ala   Ser Glu Arg Val Gln   Leu Leu His Thr Gln   Asn Thr Ser
    1715   1720   1725

Leu Ile   Asn Thr Lys Lys Lys   Leu Glu Thr Asp Ile   Ser Gln Met
    1730   1735   1740

Gln Gly   Glu Met Glu Asp Ile   Leu Gln Glu Ala Arg   Asn Ala Glu
    1745   1750   1755

Glu Lys   Ala Lys Lys Ala Ile   Thr Asp Ala Ala Met   Met Ala Glu
    1760   1765   1770

Glu Leu   Lys Lys Glu Gln Asp   Thr Ser Ala His Leu   Glu Arg Met
    1775   1780   1785

Lys Lys   Asn Met Glu Gln Thr   Val Lys Asp Leu Gln   Leu Arg Leu
    1790   1795   1800

Asp Glu Ala Glu Gln Leu Ala Leu Lys Gly Gly Lys Lys Gln Ile
    1805   1810   1815

Gln Lys Leu Glu Ala Arg Val Arg Glu Leu Glu Gly Glu Val Glu
    1820   1825   1830

Ser Glu Gln Lys Arg Asn Ala Glu Ala Val Lys Gly Leu Arg Lys
    1835   1840   1845

His Glu Arg Arg Val Lys Glu Leu Thr Tyr Gln Thr Glu Glu Asp
    1850   1855   1860

Arg Lys Asn Ile Leu Arg Leu Gln Asp Leu Val Asp Lys Leu Gln
    1865   1870   1875

Ala Lys Val Lys Ser Tyr Lys Arg Gln Ala Glu Glu Ala Glu Glu
    1880   1885   1890

Gln Ser Asn Thr Asn Leu Ala Lys Phe Arg Lys Leu Gln His Glu
    1895   1900   1905

Leu Glu Glu Ala Glu Glu Arg Ala Asp Ile Ala Glu Ser Gln Val
    1910   1915   1920

Asn Lys Leu Arg Val Lys Ser Arg Glu Val His Thr Lys Val Ile
    1925   1930   1935

Ser Glu Glu
     1940

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ataatacaag aggtatacct agtccagcac tgccatcaat aacctgcagc c atg agt   117
                                                          Met Ser
                                                           1

tct gac tct gag atg gcc att ttt ggg gag gct gct cct ttc ctc cga   165
Ser Asp Ser Glu Met Ala Ile Phe Gly Glu Ala Ala Pro Phe Leu Arg
          5   10   15

aag tct gaa aag gag cga att gaa gct cag aac aag cct ttt gat gcc   213
Lys Ser Glu Lys Glu Arg Ile Glu Ala Gln Asn Lys Pro Phe Asp Ala
     20   25   30

aag aca tca gtc ttt gtg gtg gac cct aag gag tcc tac gtg aaa gca   261
Lys Thr Ser Val Phe Val Val Asp Pro Lys Glu Ser Tyr Val Lys Ala
35   40   45   50

ata gtg cag agc agg gaa ggg ggg aag gtg aca gcc aag acc gaa gct   309

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           Ile Val Gln Ser Arg Glu Gly Gly Lys Val Thr Ala Lys Thr Glu Ala
                        55                  60                  65


           gga gct act gta act gtg aaa gaa gac caa gtc ttc tcc atg aac cct        357
           Gly Ala Thr Val Thr Val Lys Glu Asp Gln Val Phe Ser Met Asn Pro
                        70                  75                  80


           ccc aaa tat gac aag atc gag gac atg gcc atg atg act cac ctg cat        405
           Pro Lys Tyr Asp Lys Ile Glu Asp Met Ala Met Met Thr His Leu His
                        85                  90                  95


           gag cct gct gtg ctg tat aac ctc aaa gag cgt tac gca gcc tgg atg        453
           Glu Pro Ala Val Leu Tyr Asn Leu Lys Glu Arg Tyr Ala Ala Trp Met
                   100                 105                 110


           atc tac acc tac tcg ggc ctc ttc tgt gtc acc gtc aac ccc tac aag        501
           Ile Tyr Thr Tyr Ser Gly Leu Phe Cys Val Thr Val Asn Pro Tyr Lys
               115                 120                 125                 130


           tgg ctg ccg gtg tac aac cct gag gtg gtg aca gcc tac cga ggc aaa        549
           Trp Leu Pro Val Tyr Asn Pro Glu Val Val Thr Ala Tyr Arg Gly Lys
                        135                 140                 145


           aag cgc cag gag gcc cca ccc cat atc ttc tcc atc tct gac aat gcc        597
           Lys Arg Gln Glu Ala Pro Pro His Ile Phe Ser Ile Ser Asp Asn Ala
                        150                 155                 160


           tat cag ttc atg cta act gat cgt gaa aac cag tca atc ttg att act        645
           Tyr Gln Phe Met Leu Thr Asp Arg Glu Asn Gln Ser Ile Leu Ile Thr
                        165                 170                 175


           gga gaa tct ggt gca ggg aag act gtg aac acg aag cgt gtc atc cag        693
           Gly Glu Ser Gly Ala Gly Lys Thr Val Asn Thr Lys Arg Val Ile Gln
                   180                 185                 190


           tac ttt gca aca att gca gtt act gga gag aag aaa aaa gag gaa cct        741
```

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        Tyr Phe Ala Thr Ile Ala Val Thr Gly Glu Lys Lys Lys Glu Glu Pro
        195                 200             205             210


gcc tct ggc aaa atg cag ggg acc ctt gaa gat caa atc atc agt gct      789
Ala Ser Gly Lys Met Gln Gly Thr Leu Glu Asp Gln Ile Ile Ser Ala
                215             220             225


aac ccc cta ctg gaa gcc ttc ggc aat gcc aag acc gtg agg aat gac      837
Asn Pro Leu Leu Glu Ala Phe Gly Asn Ala Lys Thr Val Arg Asn Asp
                230             235             240


aac tcc tct cgc ttt ggt aaa ttc atc agg atc cat ttt ggt gcc aca      885
Asn Ser Ser Arg Phe Gly Lys Phe Ile Arg Ile His Phe Gly Ala Thr
                245             250             255


ggc aaa ctg gct tct gca gat att gaa aca tat ctg cta gag aag tcc      933
Gly Lys Leu Ala Ser Ala Asp Ile Glu Thr Tyr Leu Leu Glu Lys Ser
        260             265             270


cga gtt act ttt cag cta aag gct gaa aga agc tac cac ata ttt tat      981
Arg Val Thr Phe Gln Leu Lys Ala Glu Arg Ser Tyr His Ile Phe Tyr
275             280             285             290


caa atc ctg tcc aat aag aaa cca gag ctc att gaa atg ctt ctg atc      1029
Gln Ile Leu Ser Asn Lys Lys Pro Glu Leu Ile Glu Met Leu Leu Ile
                295             300             305


acc acc aac cca tat gac ttc gca ttt gtc agc caa ggg gaa att act      1077
Thr Thr Asn Pro Tyr Asp Phe Ala Phe Val Ser Gln Gly Glu Ile Thr
                310             315             320


gtg ccc agc att gat gac cag gaa gag ctg atg gcc aca gat agt gct      1125
Val Pro Ser Ile Asp Asp Gln Glu Glu Leu Met Ala Thr Asp Ser Ala
        325             330             335


gtg gac atc ctg ggt ttc act gct gat gaa aag gtg gcc att tac aag      1173
```

```
Val Asp Ile Leu Gly Phe Thr Ala Asp Glu Lys Val Ala Ile Tyr Lys
    340             345             350


ctc act gga gcc gtg atg cat tat ggg aac atg aaa ttc aag caa aag      1221
Leu Thr Gly Ala Val Met His Tyr Gly Asn Met Lys Phe Lys Gln Lys
355             360             365             370


caa agg gaa gag cag gca gag cca gat ggc acg gaa gtt gct gac aaa      1269
Gln Arg Glu Glu Gln Ala Glu Pro Asp Gly Thr Glu Val Ala Asp Lys
            375             380             385


gct gct tat ctg aca agt ctg aac tct gct gac ctg ctc aaa tct ctc      1317
Ala Ala Tyr Leu Thr Ser Leu Asn Ser Ala Asp Leu Leu Lys Ser Leu
            390             395             400


tgc tat ccc aga gtc aag gtc ggc aat gag ttc gta acc aaa ggc cag      1365
Cys Tyr Pro Arg Val Lys Val Gly Asn Glu Phe Val Thr Lys Gly Gln
            405             410             415


act gtg cag cag gtg tac aac gca gtg ggt gct ctg gcc aaa gcc atc      1413
Thr Val Gln Gln Val Tyr Asn Ala Val Gly Ala Leu Ala Lys Ala Ile
    420             425             430


tac gag aag atg ttc ctg tgg atg gtc acc cgc atc aac cag cag ctg      1461
Tyr Glu Lys Met Phe Leu Trp Met Val Thr Arg Ile Asn Gln Gln Leu
435             440             445             450


gac acc aag cag ccc agg cag tac ttc atc ggg gtc ttg gac att gct      1509
Asp Thr Lys Gln Pro Arg Gln Tyr Phe Ile Gly Val Leu Asp Ile Ala
                455             460             465


ggc ttt gag atc ttt gat ttc aac agc ctg gag cag ctg tgc atc aac      1557
Gly Phe Glu Ile Phe Asp Phe Asn Ser Leu Glu Gln Leu Cys Ile Asn
            470             475             480


ttc acc aac gag aaa ctg caa cag ttt ttc aac cac cac atg ttc gtg      1605
```

Phe Thr Asn Glu Lys Leu Gln Gln Phe Phe Asn His His Met Phe Val
         485   490   495

ctg gag cag gaa gag tac aag aag gaa ggc atc gag tgg gag ttc att   1653
Leu Glu Gln Glu Glu Tyr Lys Lys Glu Gly Ile Glu Trp Glu Phe Ile
         500   505   510

gac ttc ggg atg gac ctg gct gcc tgc atc gag ctc atc gag aag cct   1701
Asp Phe Gly Met Asp Leu Ala Ala Cys Ile Glu Leu Ile Glu Lys Pro
515   520   525   530

atg ggc atc ttc tcc atc cta gaa gag gag tgc atg ttc ccc aag gca   1749
Met Gly Ile Phe Ser Ile Leu Glu Glu Glu Cys Met Phe Pro Lys Ala
                   535   540   545

aca gac acc tcc ttc aag aac aag ctg tat gaa caa cat ctt gga aaa   1797
Thr Asp Thr Ser Phe Lys Asn Lys Leu Tyr Glu Gln His Leu Gly Lys
                   550   555   560

tcc aac aac ttc cag aag ccc aag cct gcc aaa ggc aag cct gag gct   1845
Ser Asn Asn Phe Gln Lys Pro Lys Pro Ala Lys Gly Lys Pro Glu Ala
         565   570   575

cac ttc tca ctg gtg cac tat gcc ggc acc gtg gac tac aac atc gcc   1893
His Phe Ser Leu Val His Tyr Ala Gly Thr Val Asp Tyr Asn Ile Ala
         580   585   590

ggc tgg ctg gac aaa aac aag gac ccc ctg aat gag act gtg gtg ggg   1941
Gly Trp Leu Asp Lys Asn Lys Asp Pro Leu Asn Glu Thr Val Val Gly
595   600   605   610

ctg tac cag aag tct gca atg aag act ctg gct ttc ctc ttc tct ggg   1989
Leu Tyr Gln Lys Ser Ala Met Lys Thr Leu Ala Phe Leu Phe Ser Gly
                   615   620   625

gca caa act gct gaa gca gag ggt ggt ggt gga aag aaa ggt ggc aaa   2037

```
      Ala Gln Thr Ala Glu Ala Glu Gly Gly Gly Gly Lys Lys Gly Gly Lys
                  630             635             640


      aag aag ggt tct tct ttc cag aca gtg tca gct ctt ttc agg gag aat      2085
      Lys Lys Gly Ser Ser Phe Gln Thr Val Ser Ala Leu Phe Arg Glu Asn
                  645             650             655


      ttg aat aag ctg atg acc aac ttg agg agc act cac ccc cac ttt gtg      2133
      Leu Asn Lys Leu Met Thr Asn Leu Arg Ser Thr His Pro His Phe Val
                  660             665             670


      cgg tgc atc atc ccc aat gaa act aaa act cct ggt gcc atg gag cat      2181
      Arg Cys Ile Ile Pro Asn Glu Thr Lys Thr Pro Gly Ala Met Glu His
      675             680             685             690


      gag ctt gtc ctg cat cag ctg agg tgt aac ggt gtg ctg gaa ggc atc      2229
      Glu Leu Val Leu His Gln Leu Arg Cys Asn Gly Val Leu Glu Gly Ile
                  695             700             705


      cgc atc tgc agg aaa ggc ttc cca agc aga atc ctt tat gca gac ttc      2277
      Arg Ile Cys Arg Lys Gly Phe Pro Ser Arg Ile Leu Tyr Ala Asp Phe
                  710             715             720


      aaa cag aga tac aag gtt cta aat gcg agt gct atc cca gag ggt cag      2325
      Lys Gln Arg Tyr Lys Val Leu Asn Ala Ser Ala Ile Pro Glu Gly Gln
                  725             730             735


      ttc att gac agc aag aag gct tct gag aaa ctt cta ggg tct att gaa      2373
      Phe Ile Asp Ser Lys Lys Ala Ser Glu Lys Leu Leu Gly Ser Ile Glu
                  740             745             750


      att gac cac acc cag tac aaa ttc ggt cat acc aag gtt ttc ttc aaa      2421
      Ile Asp His Thr Gln Tyr Lys Phe Gly His Thr Lys Val Phe Phe Lys
      755             760             765             770


      gct ggc ctg ctg gga act cta gaa gaa atg cga gat gaa aag cta gct      2469
```

Ala Gly Leu Leu Gly Thr Leu Glu Glu Met Arg Asp Glu Lys Leu Ala
            775   780   785

caa ctc atc acg cgc act caa gcc ata tgc agg ggg ttc ctg atg aga   2517
Gln Leu Ile Thr Arg Thr Gln Ala Ile Cys Arg Gly Phe Leu Met Arg
            790   795   800

gtg gag ttc aga aag atg atg gag agg aga gag tcc atc ttc tgc att   2565
Val Glu Phe Arg Lys Met Met Glu Arg Arg Glu Ser Ile Phe Cys Ile
            805   810   815

cag tac aac atc cgt gct ttc atg aat gtg aag cac tgg ccc tgg atg   2613
Gln Tyr Asn Ile Arg Ala Phe Met Asn Val Lys His Trp Pro Trp Met
            820   825   830

aag ctg tat ttc aag atc aag ccc ctc ctc aag agt gca gag aca gag   2661
Lys Leu Tyr Phe Lys Ile Lys Pro Leu Leu Lys Ser Ala Glu Thr Glu
835   840   845   850

aag gag atg gcc aac atg aag gaa gaa ttt gag aaa acc aaa gaa gag   2709
Lys Glu Met Ala Asn Met Lys Glu Glu Phe Glu Lys Thr Lys Glu Glu
                855   860   865

ctg gct aag aca gag gca aaa agg aaa gaa cta gaa gaa aag atg gtg   2757
Leu Ala Lys Thr Glu Ala Lys Arg Lys Glu Leu Glu Glu Lys Met Val
            870   875   880

acg cta atg caa gag aaa aat gac tta caa ctc caa gtt caa gct gaa   2805
Thr Leu Met Gln Glu Lys Asn Asp Leu Gln Leu Gln Val Gln Ala Glu
            885   890   895

gca gat gcc ttg gct gat gca gag gaa aga tgt gat cag ttg att aaa   2853
Ala Asp Ala Leu Ala Asp Ala Glu Glu Arg Cys Asp Gln Leu Ile Lys
            900   905   910

acc aaa atc caa ctt gag gcc aaa atc aaa gag gta act gaa aga gct   2901

Thr Lys Ile Gln Leu Glu Ala Lys Ile Lys Glu Val Thr Glu Arg Ala
915   920   925   930

gag gat gag gaa gag atc aat gct gag ctg aca gcc aag aag agg aaa   2949
Glu Asp Glu Glu Glu Ile Asn Ala Glu Leu Thr Ala Lys Lys Arg Lys
                935   940   945

ctg gag gat gaa tgt tca gag ctc aag aaa gac att gat gac ctt gag   2997
Leu Glu Asp Glu Cys Ser Glu Leu Lys Lys Asp Ile Asp Asp Leu Glu
                950   955   960

ctg aca ctg gcc aag gtt gag aag gag aaa cat gcc aca gag aac aag   3045
Leu Thr Leu Ala Lys Val Glu Lys Glu Lys His Ala Thr Glu Asn Lys
                965   970   975

gtg aaa aac ctc aca gaa gag atg gca ggt ctg gat gaa acc att gct   3093
Val Lys Asn Leu Thr Glu Glu Met Ala Gly Leu Asp Glu Thr Ile Ala
                980   985   990

aag ctg acc aag gag aag aag gct ctc cag gag gcc cac cag cag   3138
Lys Leu Thr Lys Glu Lys Lys Ala Leu Gln Glu Ala His Gln Gln
995   1000   1005

acc ctg gat gac ctg cag atg gag gag gac aaa gtc aac acc ctg   3183
Thr Leu Asp Asp Leu Gln Met Glu Glu Asp Lys Val Asn Thr Leu
1010   1015   1020

acc aaa gct aaa acc aag cta gaa cag caa gtg gac gat ctt gaa   3228
Thr Lys Ala Lys Thr Lys Leu Glu Gln Gln Val Asp Asp Leu Glu
1025   1030   1035

gga tct ctg gaa caa gaa aag aaa ctt tgc atg gac tta gaa aga   3273
Gly Ser Leu Glu Gln Glu Lys Lys Leu Cys Met Asp Leu Glu Arg
1040   1045   1050

gcc aag aga aaa ctg gag ggt gac cta aaa ttg gcc caa gaa tcc   3318

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Ala  Lys Arg Lys Leu Glu  Gly Asp Leu Lys Leu  Ala Gln Glu Ser
1055                1060                1065


aca  atg gat aca gaa aat  gac aaa cag caa ctt  aat gag aaa ctc          3363
Thr  Met Asp Thr Glu Asn  Asp Lys Gln Gln Leu  Asn Glu Lys Leu
1070                1075                1080


aaa  aag aaa gag ttt gaa  atg agc aat ctg caa  ggc aag att gaa          3408
Lys  Lys Lys Glu Phe Glu  Met Ser Asn Leu Gln  Gly Lys Ile Glu
1085                1090                1095


gat  gaa caa gcc ctt gca  atg cag cta caa aag  aag atc aaa gaa          3453
Asp  Glu Gln Ala Leu Ala  Met Gln Leu Gln Lys  Lys Ile Lys Glu
1100                1105                1110


tta  cag gcc cgc att gag  gag ctg gag gag gaa  atc gag gca gag       3498
Leu  Gln Ala Arg Ile Glu  Glu Leu Glu Glu Glu  Ile Glu Ala Glu
1115                1120                1125


cgg  gcc tcc cgg gcc aaa  gca gaa aag cag cgc  tct gac ctc tcc          3543
Arg  Ala Ser Arg Ala Lys  Ala Glu Lys Gln Arg  Ser Asp Leu Ser
1130                1135                1140


cgg  gag ctg gag gag atc  agt gag agg ctg gaa  gaa gcc ggt ggg          3588
Arg  Glu Leu Glu Glu Ile  Ser Glu Arg Leu Glu  Glu Ala Gly Gly
1145                1150                1155


gcc  act tca gcc cag att  gag ttg aac aag aag  cgg gag gct gag          3633
Ala  Thr Ser Ala Gln Ile  Glu Leu Asn Lys Lys  Arg Glu Ala Glu
1160                1165                1170


ttc  cag aaa atg cgc agg  gac ctg gaa gag tcc  acc ctg cag cac          3678
Phe  Gln Lys Met Arg Arg  Asp Leu Glu Glu Ser  Thr Leu Gln His
1175                1180                1185


gaa  gcc acg gca gct gct  ctt cgg aag aag cac  gca gat agt gtg          3723
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Glu  Ala Thr Ala Ala Ala  Leu Arg Lys Lys His  Ala Asp Ser Val
1190               1195               1200


gct  gag ctt ggg aag cag  atc gac agc ctt cag  cgg gtc aag cag    3768
Ala  Glu Leu Gly Lys Gln  Ile Asp Ser Leu Gln  Arg Val Lys Gln
1205               1210               1215


aag  ctg gag aag gaa aag  agt gag ctg aag atg  gag atc aat gac    3813
Lys  Leu Glu Lys Glu Lys  Ser Glu Leu Lys Met  Glu Ile Asn Asp
1220               1225               1230


ctt  gct agt aac atg gag  act gtc tcc aaa gcc  aag gca aac ttt    3858
Leu  Ala Ser Asn Met Glu  Thr Val Ser Lys Ala  Lys Ala Asn Phe
1235               1240               1245


gag  aaa atg tgc cgc acc  cta gag gac cag ctt  agt gaa ata aaa    3903
Glu  Lys Met Cys Arg Thr  Leu Glu Asp Gln Leu  Ser Glu Ile Lys
1250               1255               1260


aca  aag gaa gaa gag cag  caa cgc tta ata aat  gag ttg tca gcc    3948
Thr  Lys Glu Glu Glu Gln  Gln Arg Leu Ile Asn  Glu Leu Ser Ala
1265               1270               1275


cag  aag gca cgt tta cac  aca gaa tca ggt gag  ttt tca cga cag    3993
Gln  Lys Ala Arg Leu His  Thr Glu Ser Gly Glu  Phe Ser Arg Gln
1280               1285               1290


cta  gat gaa aaa gat gct  atg gtt tct cag cta  tcc cga ggc aaa    4038
Leu  Asp Glu Lys Asp Ala  Met Val Ser Gln Leu  Ser Arg Gly Lys
1295               1300               1305


caa  gca ttt aca caa cag  att gaa gaa tta aag  agg cag cta gaa    4083
Gln  Ala Phe Thr Gln Gln  Ile Glu Glu Leu Lys  Arg Gln Leu Glu
1310               1315               1320


gag  gag act aag gcc aag  agc act ctg gcc cat  gcc ctg cag tca    4128
```

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Glu   Glu Thr Lys Ala Lys   Ser Thr Leu Ala His   Ala Leu Gln Ser
1325                1330                1335


gcc   cgc cat gac tgt gac   ctg ctg cgg gaa cag   tat gag gag gag        4173
Ala   Arg His Asp Cys Asp   Leu Leu Arg Glu Gln   Tyr Glu Glu Glu
1340                1345                1350


cag   gaa gcc aag gct gag   ctg cag agg gga atg   tcc aag gcc aac        4218
Gln   Glu Ala Lys Ala Glu   Leu Gln Arg Gly Met   Ser Lys Ala Asn
1355                1360                1365


agt   gag gtt gcc cag tgg   agg acc aag tac gag   acg gac gcc atc        4263
Ser   Glu Val Ala Gln Trp   Arg Thr Lys Tyr Glu   Thr Asp Ala Ile
1370                1375                1380


cag   cgc aca gag gag ctg   gag gag gcc aag aag   aag cta gcc cag        4308
Gln   Arg Thr Glu Glu Leu   Glu Glu Ala Lys Lys   Lys Leu Ala Gln
1385                1390                1395


cgt   ctg cag gat gca gaa   gaa cat gta gaa gct   gtg aat tcc aaa        4353
Arg   Leu Gln Asp Ala Glu   Glu His Val Glu Ala   Val Asn Ser Lys
1400                1405                1410


tgt   gct tct ctt gaa aag   aca aag cag agg cta   cag aat gaa gta        4398
Cys   Ala Ser Leu Glu Lys   Thr Lys Gln Arg Leu   Gln Asn Glu Val
1415                1420                1425


gag   gac ctc atg att gat   gtg gaa cga tct aat   gct gcc tgc ata        4443
Glu   Asp Leu Met Ile Asp   Val Glu Arg Ser Asn   Ala Ala Cys Ile
1430                1435                1440


gct   ctc gat aag aag caa   aga aac ttt gac aag   gtt ctg gca gaa        4488
Ala   Leu Asp Lys Lys Gln   Arg Asn Phe Asp Lys   Val Leu Ala Glu
1445                1450                1455


tgg   aaa cag aag tat gag   gaa act cag gct gaa   ctt gag gcc tcc        4533
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     Trp  Lys Gln Lys Tyr Glu  Glu Thr Gln Ala Glu  Leu Glu Ala Ser
     1460          1465              1470


     cag  aag gag tcg cgt tct  ctc agc act gag ctg  ttc aag gtg aag        4578
     Gln  Lys Glu Ser Arg Ser  Leu Ser Thr Glu Leu  Phe Lys Val Lys
     1475              1480             1485


     aat  gcc tac gag gaa tcc  ctg gat cat ctt gaa  act cta aag cga        4623
     Asn  Ala Tyr Glu Glu Ser  Leu Asp His Leu Glu  Thr Leu Lys Arg
     1490              1495             1500


     gag  aat aag aac tta caa  cag gag att tct gac  ctg aca gag caa        4668
     Glu  Asn Lys Asn Leu Gln  Gln Glu Ile Ser Asp  Leu Thr Glu Gln
     1505              1510             1515


     att  gca gag ggt gga aag  cat atc cat gaa ctg  gag aaa gta aag        4713
     Ile  Ala Glu Gly Gly Lys  His Ile His Glu Leu  Glu Lys Val Lys
     1520              1525             1530


     aaa  caa ctt gat cat gag  aag agt gaa cta cag  act tcc cta gag        4758
     Lys  Gln Leu Asp His Glu  Lys Ser Glu Leu Gln  Thr Ser Leu Glu
     1535              1540             1545


     gaa  gca gag gca tct ctt  gag cat gaa gaa ggc  aaa att ctt cgc        4803
     Glu  Ala Glu Ala Ser Leu  Glu His Glu Glu Gly  Lys Ile Leu Arg
     1550              1555             1560


     att  caa ctt gag cta aat  cag gtg aaa tct gag  att gac cga aaa        4848
     Ile  Gln Leu Glu Leu Asn  Gln Val Lys Ser Glu  Ile Asp Arg Lys
     1565              1570             1575


     att  gct gaa aaa gat gaa  gaa ctc gat cag cta  aag agg aac cat        4893
     Ile  Ala Glu Lys Asp Glu  Glu Leu Asp Gln Leu  Lys Arg Asn His
     1580              1585             1590


     ctc  aga gtt gtg gag tca  atg cag agt aca ctg  gat gct gag atc        4938
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Leu Arg Val Val Glu Ser Met Gln Ser Thr Leu Asp Ala Glu Ile
1595   1600   1605

agg agc aga aat gat gct ctg agg atc aag aag aag atg gag gga   4983
Arg Ser Arg Asn Asp Ala Leu Arg Ile Lys Lys Lys Met Glu Gly
1610   1615   1620

gat ctt aat gaa atg gaa atc cag ctg aac cat gcc aac cgc cag   5028
Asp Leu Asn Glu Met Glu Ile Gln Leu Asn His Ala Asn Arg Gln
1625   1630   1635

gct gct gag gca cta agg aat ctt aga aac aca caa gga ata ctg   5073
Ala Ala Glu Ala Leu Arg Asn Leu Arg Asn Thr Gln Gly Ile Leu
1640   1645   1650

aag gac act cag cta cat ttg gat gat gcc atc aga ggc caa gat   5118
Lys Asp Thr Gln Leu His Leu Asp Asp Ala Ile Arg Gly Gln Asp
1655   1660   1665

gac ctt aag gaa caa ttg gca atg gtt gag cgc aga gct aac ctg   5163
Asp Leu Lys Glu Gln Leu Ala Met Val Glu Arg Arg Ala Asn Leu
1670   1675   1680

atg cag gct gaa gtt gaa gag ctc agg gca tcc ctg gaa cgg act   5208
Met Gln Ala Glu Val Glu Glu Leu Arg Ala Ser Leu Glu Arg Thr
1685   1690   1695

gag aga ggc agg aaa atg gca gag caa gag ctt ctg gat gcc agt   5253
Glu Arg Gly Arg Lys Met Ala Glu Gln Glu Leu Leu Asp Ala Ser
1700   1705   1710

gaa cgt gtg caa ctt ctg cac act cag aac acc agc ctg atc aac   5298
Glu Arg Val Gln Leu Leu His Thr Gln Asn Thr Ser Leu Ile Asn
1715   1720   1725

acc aag aag aag ctg gaa aca gac att tcc caa atc cag gga gag   5343

Thr Lys Lys Lys Leu Glu Thr Asp Ile Ser Gln Ile Gln Gly Glu
1730   1735   1740

atg gag gac atc gtc cag gaa gcc cgc aat gca gag gag aag gcc   5388
Met Glu Asp Ile Val Gln Glu Ala Arg Asn Ala Glu Glu Lys Ala
1745   1750   1755

aag aag gcc atc act gat gct gcc atg atg gct gag gag ctg aag   5433
Lys Lys Ala Ile Thr Asp Ala Ala Met Met Ala Glu Glu Leu Lys
1760   1765   1770

aag gaa cag gac acc agc gcc cac ctg gag cgg atg aag aag aac   5478
Lys Glu Gln Asp Thr Ser Ala His Leu Glu Arg Met Lys Lys Asn
1775   1780   1785

atg gag cag acc gtg aag gat ctg cag ctc cgt ctg ggt gag gct   5523
Met Glu Gln Thr Val Lys Asp Leu Gln Leu Arg Leu Gly Glu Ala
1790   1795   1800

gag cag ctg gcg ctg aag ggt ggg aag aag cag atc cag aaa ctg   5568
Glu Gln Leu Ala Leu Lys Gly Gly Lys Lys Gln Ile Gln Lys Leu
1805   1810   1815

gag gcc agg gtg aga gag ctt gaa agt gag gtg gaa agt gaa cag   5613
Glu Ala Arg Val Arg Glu Leu Glu Ser Glu Val Glu Ser Glu Gln
1820   1825   1830

aag cac aat gtt gag gct gtc aag ggt ctt cgc aaa cat gag aga   5658
Lys His Asn Val Glu Ala Val Lys Gly Leu Arg Lys His Glu Arg
1835   1840   1845

aga gtg aag gaa ctc act tac cag act gag gag gac cgc aag aat   5703
Arg Val Lys Glu Leu Thr Tyr Gln Thr Glu Glu Asp Arg Lys Asn
1850   1855   1860

att ctc agg ctg cag gac ttg gtg gac aaa ttg caa acc aaa gtc   5748

Ile Leu Arg Leu Gln Asp Leu Val Asp Lys Leu Gln Thr Lys Val
1865   1870   1875

aaa gct tac aag aga caa gct gaa gag gct gag gaa caa tcc aat   5793
Lys Ala Tyr Lys Arg Gln Ala Glu Glu Ala Glu Glu Gln Ser Asn
1880   1885   1890

gtc aac ctt gcc aag ttc cgc aag ctc cag cac gag ctg gag gag   5838
Val Asn Leu Ala Lys Phe Arg Lys Leu Gln His Glu Leu Glu Glu
1895   1900   1905

gcc gag gaa cgg gct gac att gct gag tcc caa gtc aac aag ctg   5883
Ala Glu Glu Arg Ala Asp Ile Ala Glu Ser Gln Val Asn Lys Leu
1910   1915   1920

aga gtg aag agt cgg gag gtt cac aca aaa gtc ata agt gaa gag   · ›5928
Arg Val Lys Ser Arg Glu Val His Thr Lys Val Ile Ser Glu Glu
1925   1930   1935

taa ttcattctaa tgaaagaaaa tgtgaccaaa gaaatgcacg aaatgtgaag   5981

ttctttgtca ctgtcctgta tatcaaggaa ataaa   6016

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<212> PRT
<213> Homo sapiens

<400> 4

Met Ser Ser Asp Ser Glu Met Ala Ile Phe Gly Glu Ala Ala Pro Phe
1   5   10   15

Leu Arg Lys Ser Glu Lys Glu Arg Ile Glu Ala Gln Asn Lys Pro Phe

         20   25   30

Asp Ala Lys Thr Ser Val Phe Val Val Asp Pro Lys Glu Ser Tyr Val
        35   40   45

Lys Ala Ile Val Gln Ser Arg Glu Gly Gly Lys Val Thr Ala Lys Thr
        50   55   60

Glu Ala Gly Ala Thr Val Thr Val Lys Glu Asp Gln Val Phe Ser Met
65   70   75   80

Asn Pro Pro Lys Tyr Asp Lys Ile Glu Asp Met Ala Met Met Thr His
        85   90   95

Leu His Glu Pro Ala Val Leu Tyr Asn Leu Lys Glu Arg Tyr Ala Ala
          100   105   110

Trp Met Ile Tyr Thr Tyr Ser Gly Leu Phe Cys Val Thr Val Asn Pro
          115   120   125

Tyr Lys Trp Leu Pro Val Tyr Asn Pro Glu Val Val Thr Ala Tyr Arg
          130   135   140

Gly Lys Lys Arg Gln Glu Ala Pro Pro His Ile Phe Ser Ile Ser Asp
145   150   155   160

Asn Ala Tyr Gln Phe Met Leu Thr Asp Arg Glu Asn Gln Ser Ile Leu

                    165   170   175

Ile Thr Gly Glu Ser Gly Ala Gly Lys Thr Val Asn Thr Lys Arg Val
            180   185   190

Ile Gln Tyr Phe Ala Thr Ile Ala Val Thr Gly Glu Lys Lys Lys Glu
            195   200   205

Glu Pro Ala Ser Gly Lys Met Gln Gly Thr Leu Glu Asp Gln Ile Ile
    210   215   220

Ser Ala Asn Pro Leu Leu Glu Ala Phe Gly Asn Ala Lys Thr Val Arg
225   230   235   240

Asn Asp Asn Ser Ser Arg Phe Gly Lys Phe Ile Arg Ile His Phe Gly
                245   250   255

Ala Thr Gly Lys Leu Ala Ser Ala Asp Ile Glu Thr Tyr Leu Leu Glu
            260   265   270

Lys Ser Arg Val Thr Phe Gln Leu Lys Ala Glu Arg Ser Tyr His Ile
            275   280   285

Phe Tyr Gln Ile Leu Ser Asn Lys Lys Pro Glu Leu Ile Glu Met Leu
    290   295   300

Leu Ile Thr Thr Asn Pro Tyr Asp Phe Ala Phe Val Ser Gln Gly Glu

305   310   315   320

Ile Thr Val Pro Ser Ile Asp Asp Gln Glu Glu Leu Met Ala Thr Asp
              325   330   335

Ser Ala Val Asp Ile Leu Gly Phe Thr Ala Asp Glu Lys Val Ala Ile
              340   345   350

Tyr Lys Leu Thr Gly Ala Val Met His Tyr Gly Asn Met Lys Phe Lys
              355   360   365

Gln Lys Gln Arg Glu Glu Gln Ala Glu Pro Asp Gly Thr Glu Val Ala
              370   375   380

Asp Lys Ala Ala Tyr Leu Thr Ser Leu Asn Ser Ala Asp Leu Leu Lys
385   390   395   400

Ser Leu Cys Tyr Pro Arg Val Lys Val Gly Asn Glu Phe Val Thr Lys
              405   410   415

Gly Gln Thr Val Gln Gln Val Tyr Asn Ala Val Gly Ala Leu Ala Lys
              420   425   430

Ala Ile Tyr Glu Lys Met Phe Leu Trp Met Val Thr Arg Ile Asn Gln
              435   440   445

Gln Leu Asp Thr Lys Gln Pro Arg Gln Tyr Phe Ile Gly Val Leu Asp

                 450   455   460

Ile Ala Gly Phe Glu Ile Phe Asp Phe Asn Ser Leu Glu Gln Leu Cys
465   470   475   480

Ile Asn Phe Thr Asn Glu Lys Leu Gln Gln Phe Phe Asn His His Met
                  485   490   495

Phe Val Leu Glu Gln Glu Glu Tyr Lys Lys Glu Gly Ile Glu Trp Glu
               500   505   510

Phe Ile Asp Phe Gly Met Asp Leu Ala Ala Cys Ile Glu Leu Ile Glu
             515   520   525

Lys Pro Met Gly Ile Phe Ser Ile Leu Glu Glu Glu Cys Met Phe Pro
     530   535   540

Lys Ala Thr Asp Thr Ser Phe Lys Asn Lys Leu Tyr Glu Gln His Leu
545   550   555   560

Gly Lys Ser Asn Asn Phe Gln Lys Pro Lys Pro Ala Lys Gly Lys Pro
                  565   570   575

Glu Ala His Phe Ser Leu Val His Tyr Ala Gly Thr Val Asp Tyr Asn
               580   585   590

Ile Ala Gly Trp Leu Asp Lys Asn Lys Asp Pro Leu Asn Glu Thr Val

                    595   600   605

Val Gly Leu Tyr Gln Lys Ser Ala Met Lys Thr Leu Ala Phe Leu Phe
    610   615   620

Ser Gly Ala Gln Thr Ala Glu Ala Glu Gly Gly Gly Gly Lys Lys Gly
625   630   635   640

Gly Lys Lys Lys Gly Ser Ser Phe Gln Thr Val Ser Ala Leu Phe Arg
                645   650   655

Glu Asn Leu Asn Lys Leu Met Thr Asn Leu Arg Ser Thr His Pro His
    660   665   670

Phe Val Arg Cys Ile Ile Pro Asn Glu Thr Lys Thr Pro Gly Ala Met
    675   680   685

Glu His Glu Leu Val Leu His Gln Leu Arg Cys Asn Gly Val Leu Glu
    690   695   700

Gly Ile Arg Ile Cys Arg Lys Gly Phe Pro Ser Arg Ile Leu Tyr Ala
705   710   715   720

Asp Phe Lys Gln Arg Tyr Lys Val Leu Asn Ala Ser Ala Ile Pro Glu
                725   730   735

Gly Gln Phe Ile Asp Ser Lys Lys Ala Ser Glu Lys Leu Leu Gly Ser

                    740   745   750

Ile Glu Ile Asp His Thr Gln Tyr Lys Phe Gly His Thr Lys Val Phe
        755   760   765

Phe Lys Ala Gly Leu Leu Gly Thr Leu Glu Glu Met Arg Asp Glu Lys
        770   775   780

Leu Ala Gln Leu Ile Thr Arg Thr Gln Ala Ile Cys Arg Gly Phe Leu
785   790   795   800

Met Arg Val Glu Phe Arg Lys Met Met Glu Arg Arg Glu Ser Ile Phe
                805   810   815

Cys Ile Gln Tyr Asn Ile Arg Ala Phe Met Asn Val Lys His Trp Pro
                820   825   830

Trp Met Lys Leu Tyr Phe Lys Ile Lys Pro Leu Leu Lys Ser Ala Glu
                835   840   845

Thr Glu Lys Glu Met Ala Asn Met Lys Glu Glu Phe Glu Lys Thr Lys
        850   855   860

Glu Glu Leu Ala Lys Thr Glu Ala Lys Arg Lys Glu Leu Glu Glu Lys
865   870   875   880

Met Val Thr Leu Met Gln Glu Lys Asn Asp Leu Gln Leu Gln Val Gln

                    885   890   895

        Ala Glu Ala Asp Ala Leu Ala Asp Ala Glu Glu Arg Cys Asp Gln Leu
                  900   905   910

        Ile Lys Thr Lys Ile Gln Leu Glu Ala Lys Ile Lys Glu Val Thr Glu
                  915   920   925

        Arg Ala Glu Asp Glu Glu Glu Ile Asn Ala Glu Leu Thr Ala Lys Lys
                  930   935   940

        Arg Lys Leu Glu Asp Glu Cys Ser Glu Leu Lys Lys Asp Ile Asp Asp
        945   950   955   960

        Leu Glu Leu Thr Leu Ala Lys Val Glu Lys Glu Lys His Ala Thr Glu
                      965   970   975

        Asn Lys Val Lys Asn Leu Thr Glu Glu Met Ala Gly Leu Asp Glu Thr
                      980   985   990

        Ile Ala Lys Leu Thr Lys Glu Lys Lys Ala Leu Gln Glu Ala His Gln
                  995   1000   1005

        Gln Thr Leu Asp Asp Leu Gln Met Glu Glu Asp Lys Val Asn Thr
                  1010   1015   1020

        Leu Thr Lys Ala Lys Thr Lys Leu Glu Gln Gln Val Asp Asp Leu

1025   1030   1035

Glu Gly Ser Leu Glu Gln Glu Lys Lys Leu Cys Met Asp Leu Glu
   1040   1045   1050

Arg Ala Lys Arg Lys Leu Glu Gly Asp Leu Lys Leu Ala Gln Glu
   1055   1060   1065

Ser Thr Met Asp Thr Glu Asn Asp Lys Gln Gln Leu Asn Glu Lys
    1070   1075   1080

Leu Lys Lys Lys Glu Phe Glu Met Ser Asn Leu Gln Gly Lys Ile
   1085   1090   1095

Glu Asp Glu Gln Ala Leu Ala Met Gln Leu Gln Lys Lys Ile Lys
   1100   1105   1110

Glu Leu Gln Ala Arg Ile Glu Glu Leu Glu Glu Glu Ile Glu Ala
   1115   1120   1125

Glu Arg Ala Ser Arg Ala Lys Ala Glu Lys Gln Arg Ser Asp Leu
   1130   1135   1140

Ser Arg Glu Leu Glu Glu Ile Ser Glu Arg Leu Glu Glu Ala Gly
   1145   1150   1155

Gly Ala Thr Ser Ala Gln Ile Glu Leu Asn Lys Lys Arg Glu Ala

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              1160                    1165                      1170


      Glu Phe  Gln Lys Met Arg Arg  Asp Leu Glu Glu Ser  Thr Leu Gln
           1175                   1180                   1185


      His Glu  Ala Thr Ala Ala Ala  Leu Arg Lys Lys His  Ala Asp Ser
           1190                   1195                   1200


      Val Ala  Glu Leu Gly Lys Gln  Ile Asp Ser Leu Gln  Arg Val Lys
           1205                   1210                   1215


      Gln Lys  Leu Glu Lys Glu Lys  Ser Glu Leu Lys Met  Glu Ile Asn
           1220                   1225                   1230


      Asp Leu  Ala Ser Asn Met Glu  Thr Val Ser Lys Ala  Lys Ala Asn
           1235                   1240                   1245


      Phe Glu  Lys Met Cys Arg Thr  Leu Glu Asp Gln Leu  Ser Glu Ile
           1250                   1255                   1260


      Lys Thr  Lys Glu Glu Glu Gln  Gln Arg Leu Ile Asn  Glu Leu Ser
           1265                   1270                   1275


      Ala Gln  Lys Ala Arg Leu His  Thr Glu Ser Gly Glu  Phe Ser Arg
           1280                   1285                   1290


      Gln Leu  Asp Glu Lys Asp Ala  Met Val Ser Gln Leu  Ser Arg Gly
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                1295   1300   1305

Lys Gln Ala Phe Thr Gln Gln Ile Glu Glu Leu Lys Arg Gln Leu
       1310   1315   1320

Glu Glu Glu Thr Lys Ala Lys Ser Thr Leu Ala His Ala Leu Gln
       1325   1330   1335

Ser Ala Arg His Asp Cys Asp Leu Leu Arg Glu Gln Tyr Glu Glu
       1340   1345   1350

Glu Gln Glu Ala Lys Ala Glu Leu Gln Arg Gly Met Ser Lys Ala
       1355   1360   1365

Asn Ser Glu Val Ala Gln Trp Arg Thr Lys Tyr Glu Thr Asp Ala
       1370   1375   1380

Ile Gln Arg Thr Glu Glu Leu Glu Glu Ala Lys Lys Lys Leu Ala
       1385   1390   1395

Gln Arg Leu Gln Asp Ala Glu Glu His Val Glu Ala Val Asn Ser
       1400   1405   1410

Lys Cys Ala Ser Leu Glu Lys Thr Lys Gln Arg Leu Gln Asn Glu
       1415   1420   1425

Val Glu Asp Leu Met Ile Asp Val Glu Arg Ser Asn Ala Ala Cys

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        1430                1435                    1440



Ile Ala  Leu Asp Lys Lys Gln  Arg Asn Phe Asp Lys  Val Leu Ala
        1445                1450                1455



Glu Trp  Lys Gln Lys Tyr Glu  Glu Thr Gln Ala Glu  Leu Glu Ala
        1460                1465                1470



Ser Gln  Lys Glu Ser Arg Ser  Leu Ser Thr Glu Leu  Phe Lys Val
        1475                1480                1485



Lys Asn  Ala Tyr Glu Glu Ser  Leu Asp His Leu Glu  Thr Leu Lys
        1490                1495                1500



Arg Glu  Asn Lys Asn Leu Gln  Gln Glu Ile Ser Asp  Leu Thr Glu
        1505                1510                1515



Gln Ile  Ala Glu Gly Gly Lys  His Ile His Glu Leu  Glu Lys Val
        1520                1525                1530



Lys Lys  Gln Leu Asp His Glu  Lys Ser Glu Leu Gln  Thr Ser Leu
        1535                1540                1545



Glu Glu  Ala Glu Ala Ser Leu  Glu His Glu Glu Gly  Lys Ile Leu
        1550                1555                1560



Arg Ile  Gln Leu Glu Leu Asn  Gln Val Lys Ser Glu  Ile Asp Arg
```

        1565   1570   1575

Lys Ile Ala Glu Lys Asp Glu Glu Leu Asp Gln Leu Lys Arg Asn
   1580   1585   1590

His Leu Arg Val Val Glu Ser Met Gln Ser Thr Leu Asp Ala Glu
   1595   1600   1605

Ile Arg Ser Arg Asn Asp Ala Leu Arg Ile Lys Lys Lys Met Glu
   1610   1615   1620

Gly Asp Leu Asn Glu Met Glu Ile Gln Leu Asn His Ala Asn Arg
   1625   1630   1635

Gln Ala Ala Glu Ala Leu Arg Asn Leu Arg Asn Thr Gln Gly Ile
   1640   1645   1650

Leu Lys Asp Thr Gln Leu His Leu Asp Asp Ala Ile Arg Gly Gln
   1655   1660   1665

Asp Asp Leu Lys Glu Gln Leu Ala Met Val Glu Arg Arg Ala Asn
   1670   1675   1680

Leu Met Gln Ala Glu Val Glu Glu Leu Arg Ala Ser Leu Glu Arg
   1685   1690   1695

Thr Glu Arg Gly Arg Lys Met Ala Glu Gln Glu Leu Leu Asp Ala

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        1700                    1705                      1710


Ser Glu  Arg Val Gln Leu Leu  His Thr Gln Asn Thr  Ser Leu Ile
    1715                    1720                      1725


Asn Thr  Lys Lys Lys Leu Glu  Thr Asp Ile Ser Gln  Ile Gln Gly
    1730                    1735                      1740


Glu Met  Glu Asp Ile Val Gln  Glu Ala Arg Asn Ala  Glu Glu Lys
    1745                    1750                      1755


Ala Lys  Lys Ala Ile Thr Asp  Ala Ala Met Met Ala  Glu Glu Leu
    1760                    1765                      1770


Lys Lys  Glu Gln Asp Thr Ser  Ala His Leu Glu Arg  Met Lys Lys
    1775                    1780                      1785


Asn Met  Glu Gln Thr Val Lys  Asp Leu Gln Leu Arg  Leu Gly Glu
    1790                    1795                      1800


Ala Glu  Gln Leu Ala Leu Lys  Gly Gly Lys Lys Gln  Ile Gln Lys
    1805                    1810                      1815


Leu Glu  Ala Arg Val Arg Glu  Leu Glu Ser Glu Val  Glu Ser Glu
    1820                    1825                      1830


Gln Lys  His Asn Val Glu Ala  Val Lys Gly Leu Arg  Lys His Glu
```

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        1835                    1840                    1845


Arg Arg  Val Lys Glu Leu Thr  Tyr Gln Thr Glu Glu  Asp Arg Lys
        1850                    1855                    1860


Asn Ile  Leu Arg Leu Gln Asp  Leu Val Asp Lys Leu  Gln Thr Lys
        1865                    1870                    1875


Val Lys  Ala Tyr Lys Arg Gln  Ala Glu Glu Ala Glu  Glu Gln Ser
        1880                    1885                    1890


Asn Val  Asn Leu Ala Lys Phe  Arg Lys Leu Gln His  Glu Leu Glu
        1895                    1900                    1905


Glu Ala  Glu Glu Arg Ala Asp  Ile Ala Glu Ser Gln  Val Asn Lys
        1910                    1915                    1920


Leu Arg  Val Lys Ser Arg Glu  Val His Thr Lys Val  Ile Ser Glu
        1925                    1930                    1935


Glu
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atg agt tct gac tct gag atg gcc att ttt ggg gag gct gct cct ttc      48
Met Ser Ser Asp Ser Glu Met Ala Ile Phe Gly Glu Ala Ala Pro Phe
1               5               10              15


ctc cga aag tct gaa agg gag cga att gaa gcc cag aac aag cct ttt      96
Leu Arg Lys Ser Glu Arg Glu Arg Ile Glu Ala Gln Asn Lys Pro Phe
            20              25              30


gat gcc aag aca tca gtc ttt gtg gtg gac cct aag gag tcc ttt gtg     144
Asp Ala Lys Thr Ser Val Phe Val Val Asp Pro Lys Glu Ser Phe Val
            35              40              45


aaa gca aca gtg cag agc agg gaa ggg ggg aag gtg aca gct aag acc     192
Lys Ala Thr Val Gln Ser Arg Glu Gly Gly Lys Val Thr Ala Lys Thr
        50              55              60


gaa gct gga gct act gta aca gtg aaa gat gac caa gtc ttc ccc atg     240
Glu Ala Gly Ala Thr Val Thr Val Lys Asp Asp Gln Val Phe Pro Met
65              70              75              80


aac cct ccc aaa tat gac aag atc gag gac atg gcc atg atg act cat     288
Asn Pro Pro Lys Tyr Asp Lys Ile Glu Asp Met Ala Met Met Thr His
                85              90              95


cta cac gag cct gct gtg ctg tac aac ctc aaa gag cgc tac gca gcc     336
Leu His Glu Pro Ala Val Leu Tyr Asn Leu Lys Glu Arg Tyr Ala Ala
                100             105             110


tgg atg atc tac acc tac tca ggc ttg ttc tgt gtc act gtc aac ccc     384
Trp Met Ile Tyr Thr Tyr Ser Gly Leu Phe Cys Val Thr Val Asn Pro
```

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              115                    120                    125

tac aag tgg ttg cca gtg tat aat gca gaa gtg gtg aca gcc tac cga        432
Tyr Lys Trp Leu Pro Val Tyr Asn Ala Glu Val Val Thr Ala Tyr Arg
    130                    135                    140


ggc aaa aag cgc cag gaa gcc cca ccc cac atc ttc tcc atc tct gac        480
Gly Lys Lys Arg Gln Glu Ala Pro Pro His Ile Phe Ser Ile Ser Asp
145                    150                    155                    160


aat gcc tat cag ttc atg ctg act gat cgg gag aat cag tct atc ttg        528
Asn Ala Tyr Gln Phe Met Leu Thr Asp Arg Glu Asn Gln Ser Ile Leu
                       165                    170                    175


atc acc gga gaa tct ggc gca ggg aag act gtg aac acc aag cgt gtc        576
Ile Thr Gly Glu Ser Gly Ala Gly Lys Thr Val Asn Thr Lys Arg Val
                   180                    185                    190


atc cag tac ttt gca aca att gca gtt act ggg gag aag aag aag gaa        624
Ile Gln Tyr Phe Ala Thr Ile Ala Val Thr Gly Glu Lys Lys Lys Glu
               195                    200                    205


gaa gtt act tct ggc aaa atg cag ggg act ctg gaa gat caa atc atc        672
Glu Val Thr Ser Gly Lys Met Gln Gly Thr Leu Glu Asp Gln Ile Ile
           210                    215                    220


agt gcc aac ccc cta ctg gag gcc ttt ggc aac gcc aag acc gtg agg        720
Ser Ala Asn Pro Leu Leu Glu Ala Phe Gly Asn Ala Lys Thr Val Arg
225                    230                    235                    240


aat gac aac tcc tct cgc ttt ggt aaa ttc atc agg atc cac ttc ggt        768
Asn Asp Asn Ser Ser Arg Phe Gly Lys Phe Ile Arg Ile His Phe Gly
                   245                    250                    255


acc aca ggg aaa ctg gct tct gct gat att gaa aca tat ctt ctg gag        816
Thr Thr Gly Lys Leu Ala Ser Ala Asp Ile Glu Thr Tyr Leu Leu Glu
```

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                260                265                270

aag tct aga gtt act ttc cag cta aag gct gaa aga agc tat cat att        864
Lys Ser Arg Val Thr Phe Gln Leu Lys Ala Glu Arg Ser Tyr His Ile
        275                280                285

ttt tat cag atc atg tct aac aag aag cca gat cta att gaa atg ctc        912
Phe Tyr Gln Ile Met Ser Asn Lys Lys Pro Asp Leu Ile Glu Met Leu
        290                295                300

ctg atc acc acc aac cca tac gat tat gcc ttc gtc agt caa ggg gag        960
Leu Ile Thr Thr Asn Pro Tyr Asp Tyr Ala Phe Val Ser Gln Gly Glu
305                310                315                320

atc aca gtg ccc agc att gat gac caa gaa gag ttg atg gct aca gat       1008
Ile Thr Val Pro Ser Ile Asp Asp Gln Glu Glu Leu Met Ala Thr Asp
                325                330                335

agt gcc att gaa att ctg ggc ttt act tca gat gaa aga gtg tcc atc       1056
Ser Ala Ile Glu Ile Leu Gly Phe Thr Ser Asp Glu Arg Val Ser Ile
                340                345                350

tat aag ctc aca ggg gct gtg atg cat tat ggg aac atg aaa ttc aag       1104
Tyr Lys Leu Thr Gly Ala Val Met His Tyr Gly Asn Met Lys Phe Lys
                355                360                365

caa aag cag cgt gag gag caa gct gag cca gat ggc act gaa gtt gct       1152
Gln Lys Gln Arg Glu Glu Gln Ala Glu Pro Asp Gly Thr Glu Val Ala
        370                375                380

gac aag gca gcc tat ctc caa aat ctg aac tct gca gat ctg ctc aaa       1200
Asp Lys Ala Ala Tyr Leu Gln Asn Leu Asn Ser Ala Asp Leu Leu Lys
385                390                395                400

gcc ctc tgc tac cct agg gtc aag gtc ggc aat gag tat gtc acc aaa       1248
Ala Leu Cys Tyr Pro Arg Val Lys Val Gly Asn Glu Tyr Val Thr Lys
```

                            405   410   415

      ggt caa act gtg cag cag gtg tac aat gca gtg ggt gct ctg gcc aaa   1296
      Gly Gln Thr Val Gln Gln Val Tyr Asn Ala Val Gly Ala Leu Ala Lys
                          420   425   430

      gct gtc tac gat aag atg ttc ttg tgg atg gtc acc cgc atc aac cag   1344
      Ala Val Tyr Asp Lys Met Phe Leu Trp Met Val Thr Arg Ile Asn Gln
                          435   440   445

      cag ctg gac acc aag cag ccc agg cag tac ttc att ggg gtc ttg gac   1392
      Gln Leu Asp Thr Lys Gln Pro Arg Gln Tyr Phe Ile Gly Val Leu Asp
                          450   455   460

      att gct ggc ttt gag atc ttt gat ttc aac agc ctg gag cag ctg tgc   1440
      Ile Ala Gly Phe Glu Ile Phe Asp Phe Asn Ser Leu Glu Gln Leu Cys
      465   470   475   480

      atc aac ttc acc aat gag aaa ctg caa cag ttt ttc aac cac cac atg   1488
      Ile Asn Phe Thr Asn Glu Lys Leu Gln Gln Phe Phe Asn His His Met
                          485   490   495

      ttc gtg ctg gag cag gag gag tac aag aag gaa ggc att gag tgg acg   1536
      Phe Val Leu Glu Gln Glu Glu Tyr Lys Lys Glu Gly Ile Glu Trp Thr
                          500   505   510

      ttc att gac ttt ggg atg gac ctg gct gcc tgc atc gag ctc atc gag   1584
      Phe Ile Asp Phe Gly Met Asp Leu Ala Ala Cys Ile Glu Leu Ile Glu
                          515   520   525

      aag cct atg ggc atc ttc tcc atc ctg gaa gag gag tgc atg ttc ccc   1632
      Lys Pro Met Gly Ile Phe Ser Ile Leu Glu Glu Glu Cys Met Phe Pro
                          530   535   540

      aag gcg aca gac acc tcc ttc aag aac aag ctg tat gaa caa cat ctt   1680
      Lys Ala Thr Asp Thr Ser Phe Lys Asn Lys Leu Tyr Glu Gln His Leu

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          545                  550                  555                  560

gga aaa tcc aat aac ttc cag aag ccc aag cct gcc aaa ggc aag cct          1728
Gly Lys Ser Asn Asn Phe Gln Lys Pro Lys Pro Ala Lys Gly Lys Pro
                    565                  570                  575

gag gcc cac ttc tct ttg att cac tat gct ggc acc gtg gac tac aac          1776
Glu Ala His Phe Ser Leu Ile His Tyr Ala Gly Thr Val Asp Tyr Asn
                    580                  585                  590

att gcc ggc tgg ctt gac aag aac aag gac ccc ctg aat gag act gtg          1824
Ile Ala Gly Trp Leu Asp Lys Asn Lys Asp Pro Leu Asn Glu Thr Val
                    595                  600                  605

gtg ggg ctg tac cag aag tct gca atg aag act ctg gct ctc ctc ttt          1872
Val Gly Leu Tyr Gln Lys Ser Ala Met Lys Thr Leu Ala Leu Leu Phe
               610                  615                  620

gtt ggg gca acg gga gcg gaa gca gag gct ggc ggt gga aag aaa ggt          1920
Val Gly Ala Thr Gly Ala Glu Ala Glu Ala Gly Gly Gly Lys Lys Gly
625                  630                  635                  640

ggt aag aag aag ggt tct tct ttc cag act gtg tcg gct ctc ttc agg          1968
Gly Lys Lys Lys Gly Ser Ser Phe Gln Thr Val Ser Ala Leu Phe Arg
                    645                  650                  655

gag aat ttg aat aag ctg atg acc aac ttg agg agc act cac ccc cac          2016
Glu Asn Leu Asn Lys Leu Met Thr Asn Leu Arg Ser Thr His Pro His
                    660                  665                  670

ttt gtg cgg tgc atc atc ccc aat gaa act aaa act cct ggt gcc atg          2064
Phe Val Arg Cys Ile Ile Pro Asn Glu Thr Lys Thr Pro Gly Ala Met
               675                  680                  685

gag cat gag ctt gtc ctg cat cag ctg agg tgt aac ggt gtg ctg gaa          2112
Glu His Glu Leu Val Leu His Gln Leu Arg Cys Asn Gly Val Leu Glu
```

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            690                     695                     700

ggc atc cgc atc tgc agg aaa ggc ttc cca agc aga atc ctt tat gca      2160
Gly Ile Arg Ile Cys Arg Lys Gly Phe Pro Ser Arg Ile Leu Tyr Ala
705                     710                     715                     720

gac ttc aaa cag aga tac aag gtg tta aat gca agt gct atc cct gaa      2208
Asp Phe Lys Gln Arg Tyr Lys Val Leu Asn Ala Ser Ala Ile Pro Glu
                        725                     730                     735

gga caa ttc atc gat agc aag aag gct tca gag aag ctc ctg ggg tcc      2256
Gly Gln Phe Ile Asp Ser Lys Lys Ala Ser Glu Lys Leu Leu Gly Ser
                    740                     745                     750

att gac att gac cac acc cag tat aaa ttt ggt cac acc aag gtc ttt      2304
Ile Asp Ile Asp His Thr Gln Tyr Lys Phe Gly His Thr Lys Val Phe
                    755                     760                     765

ttc aaa gct ggt ctt ctg ggg ctc cta gag gag atg cga gat gag aag      2352
Phe Lys Ala Gly Leu Leu Gly Leu Leu Glu Glu Met Arg Asp Glu Lys
            770                     775                     780

ctg gcc cag ctg att acc cga acc cag gcc atg tgc aga ggg ttc ttg      2400
Leu Ala Gln Leu Ile Thr Arg Thr Gln Ala Met Cys Arg Gly Phe Leu
785                     790                     795                     800

gca aga gtg gag tac cag aaa atg gtg gaa aga aga gag tcc atc ttc      2448
Ala Arg Val Glu Tyr Gln Lys Met Val Glu Arg Arg Glu Ser Ile Phe
                        805                     810                     815

tgc atc cag tac aat gtc cgt gcc ttc atg aat gtc aag cac tgg ccc      2496
Cys Ile Gln Tyr Asn Val Arg Ala Phe Met Asn Val Lys His Trp Pro
                    820                     825                     830

tgg atg aag ctg tat ttc aag atc aaa ccc ctc ctc aaa agt gca gag      2544
Trp Met Lys Leu Tyr Phe Lys Ile Lys Pro Leu Leu Lys Ser Ala Glu
```

```
              835                   840                   845


      aca gag aag gag atg gcc aac atg aag gaa gaa ttt gag aaa acc aaa        2592
      Thr Glu Lys Glu Met Ala Asn Met Lys Glu Glu Phe Glu Lys Thr Lys
          850                   855                   860


      gaa gag ctg gct aag acc gag gca aaa agg aaa gag ctg gaa gaa aaa        2640
      Glu Glu Leu Ala Lys Thr Glu Ala Lys Arg Lys Glu Leu Glu Glu Lys
      865                   870                   875                   880


      atg gtg act ctg atg caa gaa aaa aat gac ttg caa ctc cag gtt caa        2688
      Met Val Thr Leu Met Gln Glu Lys Asn Asp Leu Gln Leu Gln Val Gln
                          885                   890                   895


      gct gaa gct gac agc ttg gct gat gca gag gaa agg tgt gac cag cta        2736
      Ala Glu Ala Asp Ser Leu Ala Asp Ala Glu Glu Arg Cys Asp Gln Leu
                      900                   905                   910


      atc aaa acc aaa atc cag cta gaa gcc aaa atc aaa gag gtg act gag        2784
      Ile Lys Thr Lys Ile Gln Leu Glu Ala Lys Ile Lys Glu Val Thr Glu
                  915                   920                   925


      aga gct gag gat gag gaa gag atc aat gct gag ctg aca gcc aag aag        2832
      Arg Ala Glu Asp Glu Glu Glu Ile Asn Ala Glu Leu Thr Ala Lys Lys
          930                   935                   940


      agg aaa ctg gag gat gaa tgt tca gaa ctc aag aaa gac att gat gac        2880
      Arg Lys Leu Glu Asp Glu Cys Ser Glu Leu Lys Lys Asp Ile Asp Asp
      945                   950                   955                   960


      ctt gag ctg aca ctg gcc aag gtt gag aag gag aaa cat gcc aca gaa        2928
      Leu Glu Leu Thr Leu Ala Lys Val Glu Lys Glu Lys His Ala Thr Glu
                          965                   970                   975


      aac aag gtg aaa aac ctc aca gaa gag atg gcg ggt ctg gat gaa acc        2976
      Asn Lys Val Lys Asn Leu Thr Glu Glu Met Ala Gly Leu Asp Glu Thr
```

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                980                   985                   990

att gct aag ctg acc aag gag aag   aag gct ctc cag gag   gcc cac cag      3024
Ile Ala Lys Leu Thr Lys Glu Lys   Lys Ala Leu Gln Glu   Ala His Gln
        995                   1000                  1005


cag acc  ctg gat gac ctg cag   gca gag gag gac aaa   gtc aac acc        3069
Gln Thr  Leu Asp Asp Leu Gln   Ala Glu Glu Asp Lys   Val Asn Thr
        1010                  1015                  1020


ctg acc  aaa gct aaa atc aaa   ctt gaa caa caa gtg   gat gat ctt        3114
Leu Thr  Lys Ala Lys Ile Lys   Leu Glu Gln Gln Val   Asp Asp Leu
        1025                  1030                  1035


gaa gga  tct ttg gaa caa gaa   aag aaa atc cgg atg   gat cta gaa        3159
Glu Gly  Ser Leu Glu Gln Glu   Lys Lys Ile Arg Met   Asp Leu Glu
        1040                  1045                  1050


aga gca  aag aga aaa cta gag   gga gac cta aaa ttg   gct caa gaa        3204
Arg Ala  Lys Arg Lys Leu Glu   Gly Asp Leu Lys Leu   Ala Gln Glu
        1055                  1060                  1065


tcc gca  atg gat ata gaa aat   gac aaa caa caa ctt   gat gaa aag        3249
Ser Ala  Met Asp Ile Glu Asn   Asp Lys Gln Gln Leu   Asp Glu Lys
        1070                  1075                  1080


ctt aaa  aag aaa gag ttt gaa   atg agc ggt ctg caa   agc aag att        3294
Leu Lys  Lys Lys Glu Phe Glu   Met Ser Gly Leu Gln   Ser Lys Ile
        1085                  1090                  1095


gaa gat  gaa caa gcc ctt ggt   atg cag ctg cag aag   aaa atc aag        3339
Glu Asp  Glu Gln Ala Leu Gly   Met Gln Leu Gln Lys   Lys Ile Lys
        1100                  1105                  1110


gag tta  caa gcc cgc att gag   gag ctg gag gag gaa   atc gag gca        3384
Glu Leu  Gln Ala Arg Ile Glu   Glu Leu Glu Glu Glu   Ile Glu Ala
```

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                   1115                    1120                    1125


      gag cgg  gcc tcc cgg gcc aaa  gca gag aag cag cgc  tct gat ctc       3429
      Glu Arg  Ala Ser Arg Ala Lys  Ala Glu Lys Gln Arg  Ser Asp Leu
           1130                 1135                 1140


      tcc cgg  gag ctg gag gag atc  agt gag agg ctg gaa  gaa gcc ggt       3474
      Ser Arg  Glu Leu Glu Glu Ile  Ser Glu Arg Leu Glu  Glu Ala Gly
           1145                 1150                 1155


      ggg gcc  acc tcg gcc cag att  gag atg aac aag aag  cgg gaa gct       3519
      Gly Ala  Thr Ser Ala Gln Ile  Glu Met Asn Lys Lys  Arg Glu Ala
           1160                 1165                 1170


      gag ttc  cag aaa atg cgc agg  gac ctg gag gag gcc  acc cta cag       3564
      Glu Phe  Gln Lys Met Arg Arg  Asp Leu Glu Glu Ala  Thr Leu Gln
           1175                 1180                 1185


      cat gag  gcc acg gcg gcc acc  ctg agg aag aag cat  gca gat agt       3609
      His Glu  Ala Thr Ala Ala Thr  Leu Arg Lys Lys His  Ala Asp Ser
           1190                 1195                 1200


      gtg gcc  gag ctt ggg gag cag  att gac aac ctg cag  cga gtg aag       3654
      Val Ala  Glu Leu Gly Glu Gln  Ile Asp Asn Leu Gln  Arg Val Lys
           1205                 1210                 1215


      cag aag  ctg gag aag gag aag  agt gag atg aag atg  gag atc gat       3699
      Gln Lys  Leu Glu Lys Glu Lys  Ser Glu Met Lys Met  Glu Ile Asp
           1220                 1225                 1230


      gac ctt  gct agt aac atg gag  act gtc tcc aaa gcc  aag gga aac       3744
      Asp Leu  Ala Ser Asn Met Glu  Thr Val Ser Lys Ala  Lys Gly Asn
           1235                 1240                 1245


      ctt gaa  aag atg tgc cgc gct  cta gaa gat caa ctg  agt gaa att       3789
      Leu Glu  Lys Met Cys Arg Ala  Leu Glu Asp Gln Leu  Ser Glu Ile
```

1250   1255   1260

aag acc aag gaa gag gag cag cag cgg ctg atc aat gac ctc aca   3834
Lys Thr Lys Glu Glu Glu Gln Gln Arg Leu Ile Asn Asp Leu Thr
    1265   1270   1275

gca cag aga gcg cgc ctg caa aca gaa tca ggt gaa tat tca cgc   3879
Ala Gln Arg Ala Arg Leu Gln Thr Glu Ser Gly Glu Tyr Ser Arg
    1280   1285   1290

cag cta gat gaa aag gac aca cta gtt tca cag ctc tcg agg ggc   3924
Gln Leu Asp Glu Lys Asp Thr Leu Val Ser Gln Leu Ser Arg Gly
    1295   1300   1305

aaa caa gcc ttt act caa cag att gag gaa ctg aaa agg caa ctt   3969
Lys Gln Ala Phe Thr Gln Gln Ile Glu Glu Leu Lys Arg Gln Leu
    1310   1315   1320

gaa gag gag ata aag gcc aag agt gcc ctg gca cat gcc ctg cag   4014
Glu Glu Glu Ile Lys Ala Lys Ser Ala Leu Ala His Ala Leu Gln
    1325   1330   1335

tcc tcc cgc cat gac tgt gac ctg ctg cgg gaa cag tat gag gag   4059
Ser Ser Arg His Asp Cys Asp Leu Leu Arg Glu Gln Tyr Glu Glu
    1340   1345   1350

gag cag gaa gcc aag gcc gag cta cag aga gca atg tcc aag gcc   4104
Glu Gln Glu Ala Lys Ala Glu Leu Gln Arg Ala Met Ser Lys Ala
    1355   1360   1365

aac agt gag gtt gcc cag tgg agg acc aaa tat gag aca gat gcc   4149
Asn Ser Glu Val Ala Gln Trp Arg Thr Lys Tyr Glu Thr Asp Ala
    1370   1375   1380

atc cag cgc aca gag gag ctg gag gag gcc aag aag aag ctg gct   4194
Ile Gln Arg Thr Glu Glu Leu Glu Glu Ala Lys Lys Lys Leu Ala

```
                1385              1390              1395


    cag cgt ctg cag gat gct gag  gaa cat gta gaa gct  gtg aat gcc        4239
    Gln Arg Leu Gln Asp Ala Glu  Glu His Val Glu Ala  Val Asn Ala
        1400              1405              1410


    aaa tgt gct tcc ctt gag aag  acg aag cag agg ctc  cag aat gaa        4284
    Lys Cys Ala Ser Leu Glu Lys  Thr Lys Gln Arg Leu  Gln Asn Glu
        1415              1420              1425


    gtt gag gac ctc atg att gat  gtt gag agg aca aat  gct gcc tgt        4329
    Val Glu Asp Leu Met Ile Asp  Val Glu Arg Thr Asn  Ala Ala Cys
        1430              1435              1440


    gcc gcc ctg gac aaa aag caa  agg aac ttt gat aag  atc ctg gca        4374
    Ala Ala Leu Asp Lys Lys Gln  Arg Asn Phe Asp Lys  Ile Leu Ala
        1445              1450              1455


    gaa tgg aaa cag aag tgt gaa  gaa act cat gct gaa  ctt gaa gct        4419
    Glu Trp Lys Gln Lys Cys Glu  Glu Thr His Ala Glu  Leu Glu Ala
        1460              1465              1470


    tct caa aag gaa tcc cgc tca  ctc agc aca gaa cta  ttt aag att        4464
    Ser Gln Lys Glu Ser Arg Ser  Leu Ser Thr Glu Leu  Phe Lys Ile
        1475              1480              1485


    aag aat gct tat gag gaa tct  tta gac caa ctt gaa  acc ttg aaa        4509
    Lys Asn Ala Tyr Glu Glu Ser  Leu Asp Gln Leu Glu  Thr Leu Lys
        1490              1495              1500


    cgg gaa aat aag aat ctg cag  cag gag att tct gat  ctc act gaa        4554
    Arg Glu Asn Lys Asn Leu Gln  Gln Glu Ile Ser Asp  Leu Thr Glu
        1505              1510              1515


    cag att gca gaa gga gga aag  cgc atc cat gaa ctg  gaa aaa ata        4599
    Gln Ile Ala Glu Gly Gly Lys  Arg Ile His Glu Leu  Glu Lys Ile
```

1520   1525   1530

aag aag caa gtt gag caa gaa aag tct gaa ctt cag gct gcc tta   4644
Lys Lys Gln Val Glu Gln Glu Lys Ser Glu Leu Gln Ala Ala Leu
    1535   1540   1545

gag gag gca gag gca tct ctt gaa cat gaa gag gga aag atc ctg   4689
Glu Glu Ala Glu Ala Ser Leu Glu His Glu Glu Gly Lys Ile Leu
    1550   1555   1560

cgc atc cag ctt gag ttg aac caa gtc aag tct gag gtt gat agg   4734
Arg Ile Gln Leu Glu Leu Asn Gln Val Lys Ser Glu Val Asp Arg
    1565   1570   1575

aaa att gct gaa aaa gat gag gaa att gac cag atg aag aga aac   4779
Lys Ile Ala Glu Lys Asp Glu Glu Ile Asp Gln Met Lys Arg Asn
    1580   1585   1590

cac att aga atc gtg gag tcc atg cag agc aca ctg gat gct gag   4824
His Ile Arg Ile Val Glu Ser Met Gln Ser Thr Leu Asp Ala Glu
    1595   1600   1605

atc agg agc agg aat gat gcc att agg ctc aag aag aag atg gag   4869
Ile Arg Ser Arg Asn Asp Ala Ile Arg Leu Lys Lys Lys Met Glu
    1610   1615   1620

gga gac ctc aat gaa atg gaa atc cag ctg aac cat gcc aac cgc   4914
Gly Asp Leu Asn Glu Met Glu Ile Gln Leu Asn His Ala Asn Arg
    1625   1630   1635

atg gct gct gag gcc ctg agg aac tat agg aac acc caa gcc atc   4959
Met Ala Ala Glu Ala Leu Arg Asn Tyr Arg Asn Thr Gln Ala Ile
    1640   1645   1650

ctc aag gat acc cag ctc cac cta gat gat gct ctc cgg agc caa   5004
Leu Lys Asp Thr Gln Leu His Leu Asp Asp Ala Leu Arg Ser Gln

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        1655                1660                1665

gag gac  ctg aag gaa cag ctg  gct atg gtg gag cgc  aga gcc aac     5049
Glu Asp  Leu Lys Glu Gln Leu  Ala Met Val Glu Arg  Arg Ala Asn
        1670                1675                1680


ctg ctg  cag gct gag atc gag  gaa cta cga gcc act  ctg gaa cag     5094
Leu Leu  Gln Ala Glu Ile Glu  Glu Leu Arg Ala Thr  Leu Glu Gln
        1685                1690                1695


acg gag  agg agc agg aaa atc  gca gaa cag gag ctc  ctg gat gcc     5139
Thr Glu  Arg Ser Arg Lys Ile  Ala Glu Gln Glu Leu  Leu Asp Ala
        1700                1705                1710


agt gaa  cgt gtt cag ctc ctg  cac acc cag aac acc  agc ctg atc     5184
Ser Glu  Arg Val Gln Leu Leu  His Thr Gln Asn Thr  Ser Leu Ile
        1715                1720                1725


aac acc  aag aag aag ctg gag  aca gac att tcc caa  atc cag gga     5229
Asn Thr  Lys Lys Lys Leu Glu  Thr Asp Ile Ser Gln  Ile Gln Gly
        1730                1735                1740


gag atg  gaa gac atc atc cag  gaa gcc cgc aat gca  gaa gag aag     5274
Glu Met  Glu Asp Ile Ile Gln  Glu Ala Arg Asn Ala  Glu Glu Lys
        1745                1750                1755


gcc aag  aag gcc atc act gat  gct gcc atg atg gct  gag gag ctg     5319
Ala Lys  Lys Ala Ile Thr Asp  Ala Ala Met Met Ala  Glu Glu Leu
        1760                1765                1770


aag aag  gaa cag gac acc agc  gcc cat ctg gag cgg  atg aag aag     5364
Lys Lys  Glu Gln Asp Thr Ser  Ala His Leu Glu Arg  Met Lys Lys
        1775                1780                1785


aac ttg  gaa cag acg gtg aag  gac ctg cag cat cgt  ctg gat gag     5409
Asn Leu  Glu Gln Thr Val Lys  Asp Leu Gln His Arg  Leu Asp Glu
```

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          1790                1795                  1800


    gct gag  cag ctg gcc ctg aag  ggt ggg aag aag cag  atc cag aaa         5454
    Ala Glu  Gln Leu Ala Leu Lys  Gly Gly Lys Lys Gln  Ile Gln Lys
       1805                 1810                 1815


    ctg gag  gcc agg gtt cgt gaa  ctt gaa ggt gaa gtt  gaa agt gaa         5499
    Leu Glu  Ala Arg Val Arg Glu  Leu Glu Gly Glu Val  Glu Ser Glu
       1820                 1825                 1830


    cag aag  cgc aat gtt gaa gct  gtc aag ggt cta cgc  aaa cat gag         5544
    Gln Lys  Arg Asn Val Glu Ala  Val Lys Gly Leu Arg  Lys His Glu
       1835                 1840                 1845


    aga aaa  gtg aag gaa ctc act  tac caa act gag gaa  gac cgc aag         5589
    Arg Lys  Val Lys Glu Leu Thr  Tyr Gln Thr Glu Glu  Asp Arg Lys
       1850                 1855                 1860


    aat att  ctc agg ctg cag gac  ctg gtg gac aag ctg  caa gca aag         5634
    Asn Ile  Leu Arg Leu Gln Asp  Leu Val Asp Lys Leu  Gln Ala Lys
       1865                 1870                 1875


    gtg aaa  tcc tac aag aga caa  gct gaa gaa gcg gag  gaa caa tcc         5679
    Val Lys  Ser Tyr Lys Arg Gln  Ala Glu Glu Ala Glu  Glu Gln Ser
       1880                 1885                 1890


    aac gtc  aac ctc tcc aaa ttc  cgg agg atc cag cac  gag ctg gag         5724
    Asn Val  Asn Leu Ser Lys Phe  Arg Arg Ile Gln His  Glu Leu Glu
       1895                 1900                 1905


    gag gcc  gag gaa agg gct gac  att gct gag tcc cag  gtc aac aag         5769
    Glu Ala  Glu Glu Arg Ala Asp  Ile Ala Glu Ser Gln  Val Asn Lys
       1910                 1915                 1920


    ctg agg  gtg aag agc agg gag  gtt cac aca aaa atc  ata agt gaa         5814
    Leu Arg  Val Lys Ser Arg Glu  Val His Thr Lys Ile  Ile Ser Glu
```

```
         1925                  1930                 1935

gag taa tttatctaac tgctgaaagg tgaccaaaga aatgcacaaa atgtgaaaat          5870
Glu


ctttgtcact ccattttgta cttatgactt ttggagataa aaaatttatc tgcca          5925
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<210> 6
<211> 1939
<212> PRT
<213> Homo sapiens

<400> 6

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Met Ser Ser Asp Ser Glu Met Ala Ile Phe Gly Glu Ala Ala Pro Phe
1               5                   10                  15


Leu Arg Lys Ser Glu Arg Glu Arg Ile Glu Ala Gln Asn Lys Pro Phe
            20                  25                  30


Asp Ala Lys Thr Ser Val Phe Val Val Asp Pro Lys Glu Ser Phe Val
            35                  40                  45


Lys Ala Thr Val Gln Ser Arg Glu Gly Gly Lys Val Thr Ala Lys Thr
        50                  55                  60


Glu Ala Gly Ala Thr Val Thr Val Lys Asp Asp Gln Val Phe Pro Met
65                  70                  75                  80
```

Asn Pro Pro Lys Tyr Asp Lys Ile Glu Asp Met Ala Met Met Thr His
              85   90   95

Leu His Glu Pro Ala Val Leu Tyr Asn Leu Lys Glu Arg Tyr Ala Ala
              100   105   110

Trp Met Ile Tyr Thr Tyr Ser Gly Leu Phe Cys Val Thr Val Asn Pro
              115   120   125

Tyr Lys Trp Leu Pro Val Tyr Asn Ala Glu Val Val Thr Ala Tyr Arg
    130   135   140

Gly Lys Lys Arg Gln Glu Ala Pro Pro His Ile Phe Ser Ile Ser Asp
145   150   155   160

Asn Ala Tyr Gln Phe Met Leu Thr Asp Arg Glu Asn Gln Ser Ile Leu
              165   170   175

Ile Thr Gly Glu Ser Gly Ala Gly Lys Thr Val Asn Thr Lys Arg Val
              180   185   190

Ile Gln Tyr Phe Ala Thr Ile Ala Val Thr Gly Glu Lys Lys Lys Glu
              195   200   205

Glu Val Thr Ser Gly Lys Met Gln Gly Thr Leu Glu Asp Gln Ile Ile
    210   215   220

Ser Ala Asn Pro Leu Leu Glu Ala Phe Gly Asn Ala Lys Thr Val Arg
225   230   235   240

Asn Asp Asn Ser Ser Arg Phe Gly Lys Phe Ile Arg Ile His Phe Gly
                245   250   255

Thr Thr Gly Lys Leu Ala Ser Ala Asp Ile Glu Thr Tyr Leu Leu Glu
                260   265   270

Lys Ser Arg Val Thr Phe Gln Leu Lys Ala Glu Arg Ser Tyr His Ile
                275   280   285

Phe Tyr Gln Ile Met Ser Asn Lys Lys Pro Asp Leu Ile Glu Met Leu
                290   295   300

Leu Ile Thr Thr Asn Pro Tyr Asp Tyr Ala Phe Val Ser Gln Gly Glu
305   310   315   320

Ile Thr Val Pro Ser Ile Asp Asp Gln Glu Glu Leu Met Ala Thr Asp
                325   330   335

Ser Ala Ile Glu Ile Leu Gly Phe Thr Ser Asp Glu Arg Val Ser Ile
                340   345   350

Tyr Lys Leu Thr Gly Ala Val Met His Tyr Gly Asn Met Lys Phe Lys
                355   360   365

Gln Lys Gln Arg Glu Glu Gln Ala Glu Pro Asp Gly Thr Glu Val Ala
        370   375   380

Asp Lys Ala Ala Tyr Leu Gln Asn Leu Asn Ser Ala Asp Leu Leu Lys
385   390   395   400

Ala Leu Cys Tyr Pro Arg Val Lys Val Gly Asn Glu Tyr Val Thr Lys
                405   410   415

Gly Gln Thr Val Gln Gln Val Tyr Asn Ala Val Gly Ala Leu Ala Lys
            420   425   430

Ala Val Tyr Asp Lys Met Phe Leu Trp Met Val Thr Arg Ile Asn Gln
            435   440   445

Gln Leu Asp Thr Lys Gln Pro Arg Gln Tyr Phe Ile Gly Val Leu Asp
        450   455   460

Ile Ala Gly Phe Glu Ile Phe Asp Phe Asn Ser Leu Glu Gln Leu Cys
465   470   475   480

Ile Asn Phe Thr Asn Glu Lys Leu Gln Gln Phe Phe Asn His His Met
            485   490   495

Phe Val Leu Glu Gln Glu Glu Tyr Lys Lys Glu Gly Ile Glu Trp Thr
            500   505   510

Phe Ile Asp Phe Gly Met Asp Leu Ala Ala Cys Ile Glu Leu Ile Glu
        515   520   525

Lys Pro Met Gly Ile Phe Ser Ile Leu Glu Glu Glu Cys Met Phe Pro
        530   535   540

Lys Ala Thr Asp Thr Ser Phe Lys Asn Lys Leu Tyr Glu Gln His Leu
545   550   555   560

Gly Lys Ser Asn Asn Phe Gln Lys Pro Lys Pro Ala Lys Gly Lys Pro
                565   570   575

Glu Ala His Phe Ser Leu Ile His Tyr Ala Gly Thr Val Asp Tyr Asn
                580   585   590

Ile Ala Gly Trp Leu Asp Lys Asn Lys Asp Pro Leu Asn Glu Thr Val
        595   600   605

Val Gly Leu Tyr Gln Lys Ser Ala Met Lys Thr Leu Ala Leu Leu Phe
        610   615   620

Val Gly Ala Thr Gly Ala Glu Ala Glu Ala Gly Gly Gly Lys Lys Gly
625   630   635   640

Gly Lys Lys Lys Gly Ser Ser Phe Gln Thr Val Ser Ala Leu Phe Arg
                645   650   655

Glu Asn Leu Asn Lys Leu Met Thr Asn Leu Arg Ser Thr His Pro His
           660   665   670

Phe Val Arg Cys Ile Ile Pro Asn Glu Thr Lys Thr Pro Gly Ala Met
           675   680   685

Glu His Glu Leu Val Leu His Gln Leu Arg Cys Asn Gly Val Leu Glu
       690   ·695   700

Gly Ile Arg Ile Cys Arg Lys Gly Phe Pro Ser Arg Ile Leu Tyr Ala
705   710   715   720

Asp Phe Lys Gln Arg Tyr Lys Val Leu Asn Ala Ser Ala Ile Pro Glu
           725   730   735

Gly Gln Phe Ile Asp Ser Lys Lys Ala Ser Glu Lys Leu Leu Gly Ser
           740   745   750

Ile Asp Ile Asp His Thr Gln Tyr Lys Phe Gly His Thr Lys Val Phe
           755   760   765

Phe Lys Ala Gly Leu Leu Gly Leu Leu Glu Glu Met Arg Asp Glu Lys
           770   775   780

Leu Ala Gln Leu Ile Thr Arg Thr Gln Ala Met Cys Arg Gly Phe Leu
785   790   795   800

Ala Arg Val Glu Tyr Gln Lys Met Val Glu Arg Arg Glu Ser Ile Phe
            805   810   815

Cys Ile Gln Tyr Asn Val Arg Ala Phe Met Asn Val Lys His Trp Pro
            820   825   830

Trp Met Lys Leu Tyr Phe Lys Ile Lys Pro Leu Leu Lys Ser Ala Glu
            835   840   845

Thr Glu Lys Glu Met Ala Asn Met Lys Glu Glu Phe Glu Lys Thr Lys
            850   855   860

Glu Glu Leu Ala Lys Thr Glu Ala Lys Arg Lys Glu Leu Glu Glu Lys
865   870   875   880

Met Val Thr Leu Met Gln Glu Lys Asn Asp Leu Gln Leu Gln Val Gln
            885   890   895

Ala Glu Ala Asp Ser Leu Ala Asp Ala Glu Glu Arg Cys Asp Gln Leu
            900   905   910

Ile Lys Thr Lys Ile Gln Leu Glu Ala Lys Ile Lys Glu Val Thr Glu
            915   920   925

Arg Ala Glu Asp Glu Glu Glu Ile Asn Ala Glu Leu Thr Ala Lys Lys
            930   935   940

Arg Lys Leu Glu Asp Glu Cys Ser Glu Leu Lys Lys Asp Ile Asp Asp
945   950   955   960

Leu Glu Leu Thr Leu Ala Lys Val Glu Lys Glu Lys His Ala Thr Glu
            965   970   975

Asn Lys Val Lys Asn Leu Thr Glu Glu Met Ala Gly Leu Asp Glu Thr
            980   985   990

Ile Ala Lys Leu Thr Lys Glu Lys Lys Ala Leu Gln Glu Ala His Gln
            995   1000   1005

Gln Thr Leu Asp Asp Leu Gln Ala Glu Glu Asp Lys Val Asn Thr
    1010   1015   1020

Leu Thr Lys Ala Lys Ile Lys Leu Glu Gln Gln Val Asp Asp Leu
    1025   1030   1035

Glu Gly Ser Leu Glu Gln Glu Lys Lys Ile Arg Met Asp Leu Glu
    1040   1045   1050

Arg Ala Lys Arg Lys Leu Glu Gly Asp Leu Lys Leu Ala Gln Glu
    1055   1060   1065

Ser Ala Met Asp Ile Glu Asn Asp Lys Gln Gln Leu Asp Glu Lys
    1070   1075   1080

Leu Lys Lys Lys Glu Phe Glu Met Ser Gly Leu Gln Ser Lys Ile
    1085   1090   1095

Glu Asp Glu Gln Ala Leu Gly Met Gln Leu Gln Lys Lys Ile Lys
    1100   1105   1110

Glu Leu Gln Ala Arg Ile Glu Glu Leu Glu Glu Glu Ile Glu Ala
    1115   1120   1125

Glu Arg Ala Ser Arg Ala Lys Ala Glu Lys Gln Arg Ser Asp. Leu
    1130   1135   1140

Ser Arg Glu Leu Glu Glu Ile Ser Glu Arg Leu Glu Glu Ala Gly
    1145   1150   1155

Gly Ala Thr Ser Ala Gln Ile Glu Met Asn Lys Lys Arg Glu Ala
    1160   1165   1170

Glu Phe Gln Lys Met Arg Arg Asp Leu Glu Glu Ala Thr Leu Gln
    1175   1180   1185

His Glu Ala Thr Ala Ala Thr Leu Arg Lys Lys His Ala Asp Ser
    1190   1195   1200

Val Ala Glu Leu Gly Glu Gln Ile Asp Asn Leu Gln Arg Val Lys
    1205   1210   1215

Gln Lys Leu Glu Lys Glu Lys Ser Glu Met Lys Met Glu Ile Asp
    1220   1225   1230

Asp Leu Ala Ser Asn Met Glu Thr Val Ser Lys Ala Lys Gly Asn
    1235   1240   1245

Leu Glu Lys Met Cys Arg Ala Leu Glu Asp Gln Leu Ser Glu Ile
    1250   1255   1260

Lys Thr Lys Glu Glu Glu Gln Gln Arg Leu Ile Asn Asp Leu Thr
    1265   1270   1275

Ala Gln Arg Ala Arg Leu Gln Thr Glu Ser Gly Glu Tyr Ser Arg
    1280   1285   1290

Gln Leu Asp Glu Lys Asp Thr Leu Val Ser Gln Leu Ser Arg Gly
    1295   1300   1305

Lys Gln Ala Phe Thr Gln Gln Ile Glu Glu Leu Lys Arg Gln Leu
    1310   1315   1320

Glu Glu Glu Ile Lys Ala Lys Ser Ala Leu Ala His Ala Leu Gln
    1325   1330   1335

Ser Ser Arg His Asp Cys Asp Leu Leu Arg Glu Gln Tyr Glu Glu
    1340   1345   1350

Glu Gln Glu Ala Lys Ala Glu Leu Gln Arg Ala Met Ser Lys Ala
    1355   1360   1365

Asn Ser Glu Val Ala Gln Trp Arg Thr Lys Tyr Glu Thr Asp Ala
    1370   1375   1380

Ile Gln Arg Thr Glu Glu Leu Glu Glu Ala Lys Lys Lys Leu Ala
    1385   1390   1395

Gln Arg Leu Gln Asp Ala Glu Glu His Val Glu Ala Val Asn Ala
    1400   1405   1410

Lys Cys Ala Ser Leu Glu Lys Thr Lys Gln Arg Leu Gln Asn Glu
    1415   1420   1425

Val Glu Asp Leu Met Ile Asp Val Glu Arg Thr Asn Ala Ala Cys
    1430   1435   1440

Ala Ala Leu Asp Lys Lys Gln Arg Asn Phe Asp Lys Ile Leu Ala
    1445   1450   1455

Glu Trp Lys Gln Lys Cys Glu Glu Thr His Ala Glu Leu Glu Ala
    1460   1465   1470

Ser Gln Lys Glu Ser Arg Ser Leu Ser Thr Glu Leu Phe Lys Ile
    1475   1480   1485

Lys Asn Ala Tyr Glu Glu Ser Leu Asp Gln Leu Glu Thr Leu Lys
    1490   1495   1500

Arg Glu Asn Lys Asn Leu Gln Gln Glu Ile Ser Asp Leu Thr Glu
    1505   1510   1515

Gln Ile Ala Glu Gly Gly Lys Arg Ile His Glu Leu Glu Lys Ile
    1520   1525   1530

Lys Lys Gln Val Glu Gln Glu Lys Ser Glu Leu Gln Ala Ala.Leu
    1535   1540   1545

Glu Glu Ala Glu Ala Ser Leu Glu His Glu Glu Gly Lys Ile Leu
    1550   1555   1560

Arg Ile Gln Leu Glu Leu Asn Gln Val Lys Ser Glu Val Asp Arg
    1565   1570   1575

Lys Ile Ala Glu Lys Asp Glu Glu Ile Asp Gln Met Lys Arg Asn
    1580   1585   1590

His Ile Arg Ile Val Glu Ser Met Gln Ser Thr Leu Asp Ala Glu
    1595   1600   1605

Ile Arg Ser Arg Asn Asp Ala Ile Arg Leu Lys Lys Lys Met Glu
    1610   1615   1620

Gly Asp Leu Asn Glu Met Glu Ile Gln Leu Asn His Ala Asn Arg
    1625   1630   1635

Met Ala Ala Glu Ala Leu Arg Asn Tyr Arg Asn Thr Gln Ala Ile
    1640   1645   1650

Leu Lys Asp Thr Gln Leu His Leu Asp Asp Ala Leu Arg Ser Gln
    1655   1660   1665

Glu Asp Leu Lys Glu Gln Leu Ala Met Val Glu Arg Arg Ala Asn
    1670   1675   1680

Leu Leu Gln Ala Glu Ile Glu Glu Leu Arg Ala Thr Leu Glu Gln
    1685   1690   1695

Thr Glu Arg Ser Arg Lys Ile Ala Glu Gln Glu Leu Leu Asp Ala
    1700   1705   1710

Ser Glu Arg Val Gln Leu Leu His Thr Gln Asn Thr Ser Leu Ile
    1715   1720   1725

Asn Thr Lys Lys Lys Leu Glu Thr Asp Ile Ser Gln Ile Gln Gly
    1730   1735   1740

Glu Met Glu Asp Ile Ile Gln Glu Ala Arg Asn Ala Glu Glu Lys
    1745   1750   1755

Ala Lys Lys Ala Ile Thr Asp Ala Ala Met Met Ala Glu Glu Leu
    1760   1765   1770

Lys Lys Glu Gln Asp Thr Ser Ala His Leu Glu Arg Met Lys Lys
    1775   1780   1785

Asn Leu Glu Gln Thr Val Lys Asp Leu Gln His Arg Leu Asp Glu
    1790   1795   1800

Ala Glu Gln Leu Ala Leu Lys Gly Gly Lys Lys Gln Ile Gln.Lys
    1805   1810   1815

Leu Glu Ala Arg Val Arg Glu Leu Glu Gly Glu Val Glu Ser Glu
    1820   1825   1830

Gln Lys Arg Asn Val Glu Ala Val Lys Gly Leu Arg Lys His Glu
    1835   1840   1845

Arg Lys Val Lys Glu Leu Thr Tyr Gln Thr Glu Glu Asp Arg Lys
    1850   1855   1860

Asn Ile Leu Arg Leu Gln Asp Leu Val Asp Lys Leu Gln Ala Lys
    1865   1870   1875

Val Lys Ser Tyr Lys Arg Gln Ala Glu Glu Ala Glu Glu Gln Ser
    1880   1885   1890

Asn Val Asn Leu Ser Lys Phe Arg Arg Ile Gln His Glu Leu Glu
   1895   1900   1905

Glu Ala Glu Glu Arg Ala Asp Ile Ala Glu Ser Gln Val Asn Lys
   1910   1915   1920

Leu Arg Val Lys Ser Arg Glu Val His Thr Lys Ile Ile Ser Glu
   1925   1930   1935

Glu

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                                     Met Leu Gln Thr Lys Asp
                                   1   5

ctc atc tgg act ttg ttt ttc ctg gga act gca gtt tct ctg cag gtg   103
Leu Ile Trp Thr Leu Phe Phe Leu Gly Thr Ala Val Ser Leu Gln Val
        10   15   20

gat att gtt ccc agc cag ggg gag atc agc gtt gga gag tcc aaa ttc   151

Asp Ile Val Pro Ser Gln Gly Glu Ile Ser Val Gly Glu Ser Lys Phe
         25   30   35

ttc tta tgc caa gtg gca gga gat gcc aaa gat aaa gac atc tcc tgg   199
Phe Leu Cys Gln Val Ala Gly Asp Ala Lys Asp Lys Asp Ile Ser Trp
         40   45   50

ttc tcc ccc aat gga gaa aag ctc acc cca aac cag cag cgg atc tca   247
Phe Ser Pro Asn Gly Glu Lys Leu Thr Pro Asn Gln Gln Arg Ile Ser
55   60   65   70

gtg gtg tgg aat gat gat tcc tcc tcc acc ctc acc atc tat aac gcc   295
Val Val Trp Asn Asp Asp Ser Ser Ser Thr Leu Thr Ile Tyr Asn Ala
                 75   80   85

aac atc gac gac gcc ggc att tac aag tgt gtg gtt aca ggc gag gat   343
Asn Ile Asp Asp Ala Gly Ile Tyr Lys Cys Val Val Thr Gly Glu Asp
             90   95   100

ggc agt gag tca gag gcc acc gtc aac gtg aag atc ttt cag aag ctc   391
Gly Ser Glu Ser Glu Ala Thr Val Asn Val Lys Ile Phe Gln Lys Leu
         105   110   115

atg ttc aag aat gcg cca acc cca cag gag ttc cgg gag ggg gaa gat   439
Met Phe Lys Asn Ala Pro Thr Pro Gln Glu Phe Arg Glu Gly Glu Asp
         120   125   130

gcc gtg att gtg tgt gat gtg gtc agc tcc ctc cca cca acc atc atc   487
Ala Val Ile Val Cys Asp Val Val Ser Ser Leu Pro Pro Thr Ile Ile
135   140   145   150

tgg aaa cac aaa ggc cga gat gtc atc ctg aaa aaa gat gtc cga ttc   535
Trp Lys His Lys Gly Arg Asp Val Ile Leu Lys Lys Asp Val Arg Phe
                 155   160   165

ata gtc ctg tcc aac aac tac ctg cag atc cgg ggc atc aag aaa aca   583

```
Ile Val Leu Ser Asn Asn Tyr Leu Gln Ile Arg Gly Ile Lys Lys Thr
            170                 175                 180


gat gag ggc act tat cgc tgt gag ggc aga atc ctg gca cgg ggg gag        631
Asp Glu Gly Thr Tyr Arg Cys Glu Gly Arg Ile Leu Ala Arg Gly Glu
        185                 190                 195


atc aac ttc aag gac att cag gtc att gtg aat gtg cca cct acc atc        679
Ile Asn Phe Lys Asp Ile Gln Val Ile Val Asn Val Pro Pro Thr Ile
    200                 205                 210


cgg gcc agg cag aat att gtg aat gcc acc gcc aac ctc ggc cag tcc        727
Arg Ala Arg Gln Asn Ile Val Asn Ala Thr Ala Asn Leu Gly Gln Ser
215                 220                 225                 230


gtc acc ctg gtg tgc gat gcc gaa cgg ttc cca gag ccc acc atg agc      775
Val Thr Leu Val Cys Asp Ala Glu Arg Phe Pro Glu Pro Thr Met Ser
                235                 240                 245


tgg aca aag gat ggg gaa cag ata gag caa gag gaa gac gat gag aag        823
Trp Thr Lys Asp Gly Glu Gln Ile Glu Gln Glu Glu Asp Asp Glu Lys
            250                 255                 260


tac atc ttc agc gac gat agt tcc cag ctg acc atc aaa aag gtg gat        871
Tyr Ile Phe Ser Asp Asp Ser Ser Gln Leu Thr Ile Lys Lys Val Asp
        265                 270                 275


aag aac gac gag gct gag tac atc tgc att gct gag aac aag gct ggc        919
Lys Asn Asp Glu Ala Glu Tyr Ile Cys Ile Ala Glu Asn Lys Ala Gly
    280                 285                 290


gag cag gat gcg acc atc cac ctc aaa gtc ttt gca aaa ccc aaa atc        967
Glu Gln Asp Ala Thr Ile His Leu Lys Val Phe Ala Lys Pro Lys Ile
295                 300                 305                 310


aca tat gta gag aac cag act gcc atg gaa tta gag gag cag gtc act       1015
```

Thr Tyr Val Glu Asn Gln Thr Ala Met Glu Leu Glu Glu Gln Val Thr
        315   320   325

ctt acc tgt gaa gcc tcc gga gac ccc att ccc tcc atc acc tgg agg   1063
Leu Thr Cys Glu Ala Ser Gly Asp Pro Ile Pro Ser Ile Thr Trp Arg
        330   335   340

act tct acc cgg aac atc agc agc gaa gaa aag act ctg gat ggg cac   1111
Thr Ser Thr Arg Asn Ile Ser Ser Glu Glu Lys Thr Leu Asp Gly His
        345   350   355

atg gtg gtg cgt agc cat gcc cgt gtg tcg tcg ctg acc ctg aag agc   1159
Met Val Val Arg Ser His Ala Arg Val Ser Ser Leu Thr Leu Lys Ser
        360   365   370

atc cag tac act gat gcc gga gag tac atc tgc acc gcc agc aac acc   →1207
Ile Gln Tyr Thr Asp Ala Gly Glu Tyr Ile Cys Thr Ala Ser Asn Thr
375   380   385   390

atc ggc cag gac tcc cag tcc atg tac ctt gaa gtg caa tat gcc cca   1255
Ile Gly Gln Asp Ser Gln Ser Met Tyr Leu Glu Val Gln Tyr Ala Pro
            395   400   405

aag cta cag ggc cct gtg gct gtg tac act tgg gag ggg aac cag gtg   1303
Lys Leu Gln Gly Pro Val Ala Val Tyr Thr Trp Glu Gly Asn Gln Val
            410   415   420

aac atc acc tgc gag gta ttt gcc tat ccc agt gcc acg atc tca tgg   1351
Asn Ile Thr Cys Glu Val Phe Ala Tyr Pro Ser Ala Thr Ile Ser Trp
            425   430   435

ttt cgg gat ggc cag ctg ctg cca agc tcc aat tac agc aat atc aag   1399
Phe Arg Asp Gly Gln Leu Leu Pro Ser Ser Asn Tyr Ser Asn Ile Lys
        440   445   450

atc tac aac acc ccc tct gcc agc tat ctg gag gtg acc cca gac tct   1447

```
Ile Tyr Asn Thr Pro Ser Ala Ser Tyr Leu Glu Val Thr Pro Asp Ser
455             460             465             470
```

```
gag aat gat ttt ggg aac tac aac tgt act gca gtg aac cgc att ggg        1495
Glu Asn Asp Phe Gly Asn Tyr Asn Cys Thr Ala Val Asn Arg Ile Gly
                475             480             485
```

```
cag gag tcc ttc gaa ttc atc ctt gtt caa gca gac acc ccc tct tca        1543
Gln Glu Ser Phe Glu Phe Ile Leu Val Gln Ala Asp Thr Pro Ser Ser
                490             495             500
```

```
cca tcc atc gac cag gtg gag cca tac tcc agc aca gcc cag gtg cag        1591
Pro Ser Ile Asp Gln Val Glu Pro Tyr Ser Ser Thr Ala Gln Val Gln
            505             510             515
```

```
ttt gat gaa cca gag gcc aca ggt ggg gtg ccc atc ctc aaa tac aaa        1639
Phe Asp Glu Pro Glu Ala Thr Gly Gly Val Pro Ile Leu Lys Tyr Lys
            520             525             530
```

```
gct gag tgg aga gca gtg ggt gaa gaa gta tgg cat tcc aag tgg tat        1687
Ala Glu Trp Arg Ala Val Gly Glu Glu Val Trp His Ser Lys Trp Tyr
535             540             545             550
```

```
gat gcc aag gaa gcc agc atg gag ggc atc gtc acc atc gtg ggc ctg        1735
Asp Ala Lys Glu Ala Ser Met Glu Gly Ile Val Thr Ile Val Gly Leu
                555             560             565
```

```
aag ccc gaa aca acg tac gcc gta agg ctg gcg gcg ctc aat ggc aaa        1783
Lys Pro Glu Thr Thr Tyr Ala Val Arg Leu Ala Ala Leu Asn Gly Lys
                570             575             580
```

```
ggg ctg ggt gag atc agc gcg gcc tcc gag ttc aag acg cag cca gtc        1831
Gly Leu Gly Glu Ile Ser Ala Ala Ser Glu Phe Lys Thr Gln Pro Val
            585             590             595
```

```
caa ggg gaa ccc agt gca cct aag ctc gaa ggg cag atg gga gag gat        1879
```

```
Gln Gly Glu Pro Ser Ala Pro Lys Leu Glu Gly Gln Met Gly Glu Asp
    600                 605                 610
```

```
gga aac tct att aaa gtg aac ctg atc aag cag gat gac ggc ggc tcc    1927
Gly Asn Ser Ile Lys Val Asn Leu Ile Lys Gln Asp Asp Gly Gly Ser
615                 620                 625                 630
```

```
ccc atc aga cac tat ctg gtc agg tac cga gcg ctc tcc tcc gag tgg    1975
Pro Ile Arg His Tyr Leu Val Arg Tyr Arg Ala Leu Ser Ser Glu Trp
                635                 640                 645
```

```
aaa cca gag atc agg ctc ccg tct ggc agt gac cac gtc atg ctg aag    2023
Lys Pro Glu Ile Arg Leu Pro Ser Gly Ser Asp His Val Met Leu Lys
                650                 655                 660
```

```
tcc ctg gac tgg aat gct gag tat gag gtc tac gtg gtg gct gag aac    2071
Ser Leu Asp Trp Asn Ala Glu Tyr Glu Val Tyr Val Val Ala Glu Asn
                665                 670                 675
```

```
cag caa gga aaa tcc aag gcg gct cat ttt gtg ttc agg acc tcg gcc    2119
Gln Gln Gly Lys Ser Lys Ala Ala His Phe Val Phe Arg Thr Ser Ala
        680                 685                 690
```

```
cag ccc aca gcc atc cca gcc aac ggc agc ccc acc tca ggc ctg agc    2167
Gln Pro Thr Ala Ile Pro Ala Asn Gly Ser Pro Thr Ser Gly Leu Ser
695                 700                 705                 710
```

```
acc ggg gcc atc gtg ggc atc ctc atc gtc atc ttc gtc ctg ctc ctg    2215
Thr Gly Ala Ile Val Gly Ile Leu Ile Val Ile Phe Val Leu Leu Leu
                715                 720                 725
```

```
gtg gtt gtg gac atc acc tgc tac ttc ctg aac aag tgt ggc ctg ttc    2263
Val Val Val Asp Ile Thr Cys Tyr Phe Leu Asn Lys Cys Gly Leu Phe
                730                 735                 740
```

```
atg tgc att gcg gtc aac ctg tgt gga aaa gcc ggg ccc ggg gcc aag    2311
```

```
Met Cys Ile Ala Val Asn Leu Cys Gly Lys Ala Gly Pro Gly Ala Lys
        745                 750                 755

ggc aag gac atg gag gag ggc aag gcc gcc ttc tcg aaa gat gag tcc      2359
Gly Lys Asp Met Glu Glu Gly Lys Ala Ala Phe Ser Lys Asp Glu Ser
        760                 765                 770

aag gag ccc atc gtg gag gtt cga acg gag gag gag agg acc cca aac      2407
Lys Glu Pro Ile Val Glu Val Arg Thr Glu Glu Glu Arg Thr Pro Asn
775                 780                 785                 790

cat gat gga ggg aaa cac aca gag ccc aac gag acc acg cca ctg acg      2455
His Asp Gly Gly Lys His Thr Glu Pro Asn Glu Thr Thr Pro Leu Thr
                795                 800                 805

gag ccc gag aag ggc ccc gta gaa gca aag cca gag tgc cag gag aca      ٠2503
Glu Pro Glu Lys Gly Pro Val Glu Ala Lys Pro Glu Cys Gln Glu Thr
                810                 815                 820

gaa acg aag cca gcg cca gcc gaa gtc aag acg gtc ccc aat gac gcc      2551
Glu Thr Lys Pro Ala Pro Ala Glu Val Lys Thr Val Pro Asn Asp Ala
        825                 830                 835

aca cag aca aag gag aac gag agc aaa gca tga tgggtgaaga gaaccgagca    2604
Thr Gln Thr Lys Glu Asn Glu Ser Lys Ala
        840                 845

aagatcaaaa taaaaagtga cacagcagc                                      2633
```

<210> 8
<211> 848
<212> PRT
<213> Homo sapiens

<400> 8

```
Met Leu Gln Thr Lys Asp Leu Ile Trp Thr Leu Phe Phe Leu Gly Thr
1               5                   10                  15


Ala Val Ser Leu Gln Val Asp Ile Val Pro Ser Gln Gly Glu Ile Ser
            20                  25                  30


Val Gly Glu Ser Lys Phe Phe Leu Cys Gln Val Ala Gly Asp Ala Lys
            35                  40                  45


Asp Lys Asp Ile Ser Trp Phe Ser Pro Asn Gly Glu Lys Leu Thr Pro
    50                  55                  60


Asn Gln Gln Arg Ile Ser Val Val Trp Asn Asp Asp Ser Ser Ser Thr
65                  70                  75                  80


Leu Thr Ile Tyr Asn Ala Asn Ile Asp Asp Ala Gly Ile Tyr Lys Cys
                85                  90                  95


Val Val Thr Gly Glu Asp Gly Ser Glu Ser Glu Ala Thr Val Asn Val
            100                 105                 110


Lys Ile Phe Gln Lys Leu Met Phe Lys Asn Ala Pro Thr Pro Gln Glu
            115                 120                 125


Phe Arg Glu Gly Glu Asp Ala Val Ile Val Cys Asp Val Val Ser Ser
    130                 135                 140
```

Leu Pro Pro Thr Ile Ile Trp Lys His Lys Gly Arg Asp Val Ile Leu
145   150   155   160

Lys Lys Asp Val Arg Phe Ile Val Leu Ser Asn Asn Tyr Leu Gln Ile
            165   170   175

Arg Gly Ile Lys Lys Thr Asp Glu Gly Thr Tyr Arg Cys Glu Gly Arg
            180   185   190

Ile Leu Ala Arg Gly Glu Ile Asn Phe Lys Asp Ile Gln Val Ile Val
            195   200   205

Asn Val Pro Pro Thr Ile Arg Ala Arg Gln Asn Ile Val Asn Ala Thr
    210   215   220

Ala Asn Leu Gly Gln Ser Val Thr Leu Val Cys Asp Ala Glu Arg Phe
225   230   235   240

Pro Glu Pro Thr Met Ser Trp Thr Lys Asp Gly Glu Gln Ile Glu Gln
            245   250   255

Glu Glu Asp Asp Glu Lys Tyr Ile Phe Ser Asp Asp Ser Ser Gln Leu
            260   265   270

Thr Ile Lys Lys Val Asp Lys Asn Asp Glu Ala Glu Tyr Ile Cys Ile
    275   280   285

Ala Glu Asn Lys Ala Gly Glu Gln Asp Ala Thr Ile His Leu Lys Val
    290   295   300

Phe Ala Lys Pro Lys Ile Thr Tyr Val Glu Asn Gln Thr Ala Met Glu
305   310   315   320

Leu Glu Glu Gln Val Thr Leu Thr Cys Glu Ala Ser Gly Asp Pro Ile
                325   330   335

Pro Ser Ile Thr Trp Arg Thr Ser Thr Arg Asn Ile Ser Ser Glu Glu
                340   345   350

Lys Thr Leu Asp Gly His Met Val Val Arg Ser His Ala Arg Val Ser
            355   360   365

Ser Leu Thr Leu Lys Ser Ile Gln Tyr Thr Asp Ala Gly Glu Tyr Ile
    370   375   380

Cys Thr Ala Ser Asn Thr Ile Gly Gln Asp Ser Gln Ser Met Tyr Leu
385   390   395   400

Glu Val Gln Tyr Ala Pro Lys Leu Gln Gly Pro Val Ala Val Tyr Thr
                405   410   415

Trp Glu Gly Asn Gln Val Asn Ile Thr Cys Glu Val Phe Ala Tyr Pro
                420   425   430

Ser Ala Thr Ile Ser Trp Phe Arg Asp Gly Gln Leu Leu Pro Ser Ser
        435   440   445

Asn Tyr Ser Asn Ile Lys Ile Tyr Asn Thr Pro Ser Ala Ser Tyr Leu
        450   455   460

Glu Val Thr Pro Asp Ser Glu Asn Asp Phe Gly Asn Tyr Asn Cys Thr
465   470   475   480

Ala Val Asn Arg Ile Gly Gln Glu Ser Phe Glu Phe Ile Leu Val Gln
                485   490   495

Ala Asp Thr Pro Ser Ser Pro Ser Ile Asp Gln Val Glu Pro Tyr Ser
            500   505   510

Ser Thr Ala Gln Val Gln Phe Asp Glu Pro Glu Ala Thr Gly Gly Val
        515   520   525

Pro Ile Leu Lys Tyr Lys Ala Glu Trp Arg Ala Val Gly Glu Glu Val
    530   535   540

Trp His Ser Lys Trp Tyr Asp Ala Lys Glu Ala Ser Met Glu Gly Ile
545   550   555   560

Val Thr Ile Val Gly Leu Lys Pro Glu Thr Thr Tyr Ala Val Arg Leu
                565   570   575

Ala Ala Leu Asn Gly Lys Gly Leu Gly Glu Ile Ser Ala Ala Ser Glu
        580   585   590

Phe Lys Thr Gln Pro Val Gln Gly Glu Pro Ser Ala Pro Lys Leu Glu
        595   600   605

Gly Gln Met Gly Glu Asp Gly Asn Ser Ile Lys Val Asn Leu Ile Lys
        610   615   620

Gln Asp Asp Gly Gly Ser Pro Ile Arg His Tyr Leu Val Arg Tyr Arg
625   630   635   640

Ala Leu Ser Ser Glu Trp Lys Pro Glu Ile Arg Leu Pro Ser Gly Ser
                645   650   655

Asp His Val Met Leu Lys Ser Leu Asp Trp Asn Ala Glu Tyr Glu Val
                660   665   670

Tyr Val Val Ala Glu Asn Gln Gln Gly Lys Ser Lys Ala Ala His Phe
        675   680   685

Val Phe Arg Thr Ser Ala Gln Pro Thr Ala Ile Pro Ala Asn Gly Ser
        690   695   700

Pro Thr Ser Gly Leu Ser Thr Gly Ala Ile Val Gly Ile Leu Ile Val
705   710   715   720

Ile Phe Val Leu Leu Leu Val Val Val Asp Ile Thr Cys Tyr Phe Leu
                725   730   735

Asn Lys Cys Gly Leu Phe Met Cys Ile Ala Val Asn Leu Cys Gly Lys
                740   745   750

Ala Gly Pro Gly Ala Lys Gly Lys Asp Met Glu Glu Gly Lys Ala Ala
                755   760   765

Phe Ser Lys Asp Glu Ser Lys Glu Pro Ile Val Glu Val Arg Thr Glu
                770   775   780

Glu Glu Arg Thr Pro Asn His Asp Gly Gly Lys His Thr Glu Pro Asn
785   790   795   800

Glu Thr Thr Pro Leu Thr Glu Pro Glu Lys Gly Pro Val Glu Ala Lys
                805   810   815

Pro Glu Cys Gln Glu Thr Glu Thr Lys Pro Ala Pro Ala Glu Val Lys
                820   825   830

Thr Val Pro Asn Asp Ala Thr Gln Thr Lys Glu Asn Glu Ser Lys Ala
                835   840   845

<210> 9
<211> 1692
<212> DNA

<213> Homo sapiens

<220>
<221> CDS
<222> (121)..(1080)

<400> 9

```
attcagactg ccagcacttt gctatctaca gccggggctc ccgagcggca gaaagttccg      60


gccactctct gccgcttggg ttgggcgaaa gccaggaccg tgccgcgcca ccgccaggat     120


atg gag cta ctg tcg cca ccg ctc cgc gac gta gac ctg acg gcc ccc       168
Met Glu Leu Leu Ser Pro Pro Leu Arg Asp Val Asp Leu Thr Ala Pro
1               5                   10                  15


gac ggc tct ctc tgc tcc ttt gcc aca acg gac gac ttc tat gac gac       216
Asp Gly Ser Leu Cys Ser Phe Ala Thr Thr Asp Asp Phe Tyr Asp Asp
                20                  25                  30


ccg tgt ttc gac tcc ccg gac ctg cgc ttc ttc gaa gac ctg gac ccg       264
Pro Cys Phe Asp Ser Pro Asp Leu Arg Phe Phe Glu Asp Leu Asp Pro
            35                  40                  45


cgc ctg atg cac gtg ggc gcg ctc ctg aaa ccc gaa gag cac tcg cac       312
Arg Leu Met His Val Gly Ala Leu Leu Lys Pro Glu Glu His Ser His
        50                  55                  60


ttc ccc gcg gcg gtg cac ccg gcc ccg ggc gca cgt gag gac gag cat       360
Phe Pro Ala Ala Val His Pro Ala Pro Gly Ala Arg Glu Asp Glu His
65                  70                  75                  80


gtg cgc gcg ccc agc ggg cac cac cag gcg ggc cgc tgc cta ctg tgg       408
Val Arg Ala Pro Ser Gly His His Gln Ala Gly Arg Cys Leu Leu Trp
                85                  90                  95
```

```
gcc tgc aag gcg tgc aag cgc aag acc acc aac gcc gac cgc cgc aag      456
Ala Cys Lys Ala Cys Lys Arg Lys Thr Thr Asn Ala Asp Arg Arg Lys
            100             105             110


gcc gcc acc atg cgc gag cgg cgc cgc ctg agc aaa gta aat gag gcc      504
Ala Ala Thr Met Arg Glu Arg Arg Arg Leu Ser Lys Val Asn Glu Ala
            115             120             125


ttt gag aca ctc aag cgc tgc acg tcg agc aat cca aac cag cgg ttg      552
Phe Glu Thr Leu Lys Arg Cys Thr Ser Ser Asn Pro Asn Gln Arg Leu
        130             135             140


ccc aag gtg gag atc ctg cgc aac gcc atc cgc tat atc gag ggc ctg      600
Pro Lys Val Glu Ile Leu Arg Asn Ala Ile Arg Tyr Ile Glu Gly Leu
145             150             155             160


cag gct ctg ctg cgc gac cag gac gcc gcg ccc cct ggc gca gcc gcc      648
Gln Ala Leu Leu Arg Asp Gln Asp Ala Ala Pro Pro Gly Ala Ala Ala
                165             170             175


ttc tat gcg ccg ggc ccg ctg ccc ccg ggc cgc ggc ggc gag cac tac      696
Phe Tyr Ala Pro Gly Pro Leu Pro Pro Gly Arg Gly Gly Glu His Tyr
                180             185             190


agc ggc gac tcc gac gcg tcc agc ccg cgc tcc aac tgc tcc gac ggc      744
Ser Gly Asp Ser Asp Ala Ser Ser Pro Arg Ser Asn Cys Ser Asp Gly
            195             200             205


atg atg gac tac agc ggc ccc ccg agc ggc gcc cgg cgg cgg aac tgc      792
Met Met Asp Tyr Ser Gly Pro Pro Ser Gly Ala Arg Arg Arg Asn Cys
            210             215             220


tac gaa ggc gcc tac tac aac gag gcg ccc agc gaa ccc agg ccc ggg      840
Tyr Glu Gly Ala Tyr Tyr Asn Glu Ala Pro Ser Glu Pro Arg Pro Gly
225             230             235             240
```

```
aag agt gcg gcg gtg tcg agc cta gac tac ctg tcc agc atc gtg gag      888
Lys Ser Ala Ala Val Ser Ser Leu Asp Tyr Leu Ser Ser Ile Val Glu
                245             250             255

cgc atc tcc acc gag agc cct gcg gcg ccc gcc ctc ctg ctg gcg gac      936
Arg Ile Ser Thr Glu Ser Pro Ala Ala Pro Ala Leu Leu Leu Ala Asp
                260             265             270

gtg cct tct gag tcg cct ccg cgc agg caa gag gct gcc gcc ccc agc      984
Val Pro Ser Glu Ser Pro Pro Arg Arg Gln Glu Ala Ala Ala Pro Ser
                275             280             285

gag gga gag agc agc ggc gac ccc acc cag tca ccg gac gcc gcc ccg     1032
Glu Gly Glu Ser Ser Gly Asp Pro Thr Gln Ser Pro Asp Ala Ala Pro
        290             295             300

cag tgc cct gcg ggt gcg aac ccc aac ccg ata tac cag gtg ctc tga     1080
Gln Cys Pro Ala Gly Ala Asn Pro Asn Pro Ile Tyr Gln Val Leu
305             310             315
```

```
gggggatgtg gccgcccaac cccgccaggg atggtgccct agggtccctc gcgcccaaaa     1140

gattgaactt aaatgccccc ctcccaacag cgctttaaaa gcgccatctc ttgaggtagg     1200

agaggcggag aactgaagtt tccgcccccc ccgacagggc aaggacacag cgcggttttt     1260

tccacgcagc acccttctcg agacccatt gcgatggccg ctccgtgttc ctcggtgggc     1320

cagagctgaa ccttgagggg ctaggttcac gtttctcgcg ccctccatgg tgagaccctc     1380

gcagacctaa ccctgccccg ggatgcaccg gttatttggg ggggcgtgag acagtgcact     1440

ccggtcccaa atgtagcagg tgtaaccgta acccacccc aacccgtttc ccggttcagg     1500

accacttttt gtaatacttt ttgtaatcta ttcctgtaaa taagagttcg tttgccagag     1560
```

```
aggagcccct ggggctgtat ttatctctga ggcagggtgt gtggtgctac agggaatttg   1620

tacgtttata ccgcaggcgg gcgagccgcg ggcgctcgct caggtgatca aaataaaggc   1680

gctaatttat aa                                                       1692
```

<210> 10
<211> 319
<212> PRT
<213> Homo sapiens

<400> 10

```
Met Glu Leu Leu Ser Pro Pro Leu Arg Asp Val Asp Leu Thr Ala Pro
1               5                   10                  15

Asp Gly Ser Leu Cys Ser Phe Ala Thr Thr Asp Asp Phe Tyr Asp Asp
                20                  25                  30

Pro Cys Phe Asp Ser Pro Asp Leu Arg Phe Phe Glu Asp Leu Asp Pro
            35                  40                  45

Arg Leu Met His Val Gly Ala Leu Leu Lys Pro Glu Glu His Ser His
        50                  55                  60

Phe Pro Ala Ala Val His Pro Ala Pro Gly Ala Arg Glu Asp Glu His
65                  70                  75                  80

Val Arg Ala Pro Ser Gly His His Gln Ala Gly Arg Cys Leu Leu Trp
                85                  90                  95
```

Ala Cys Lys Ala Cys Lys Arg Lys Thr Thr Asn Ala Asp Arg Arg Lys
            100   105   110

Ala Ala Thr Met Arg Glu Arg Arg Arg Leu Ser Lys Val Asn Glu Ala
            115   120   125

Phe Glu Thr Leu Lys Arg Cys Thr Ser Ser Asn Pro Asn Gln Arg Leu
            130   135   140

Pro Lys Val Glu Ile Leu Arg Asn Ala Ile Arg Tyr Ile Glu Gly Leu
145   150   155   160

Gln Ala Leu Leu Arg Asp Gln Asp Ala Ala Pro Pro Gly Ala Ala Ala
                        165   170   175

Phe Tyr Ala Pro Gly Pro Leu Pro Pro Gly Arg Gly Gly Glu His Tyr
                180   185   190

Ser Gly Asp Ser Asp Ala Ser Ser Pro Arg Ser Asn Cys Ser Asp Gly
            195   200   205

Met Met Asp Tyr Ser Gly Pro Pro Ser Gly Ala Arg Arg Arg Asn Cys
            210   215   220

Tyr Glu Gly Ala Tyr Tyr Asn Glu Ala Pro Ser Glu Pro Arg Pro Gly
225   230   235   240

```
Lys Ser Ala Ala Val Ser Ser Leu Asp Tyr Leu Ser Ser Ile Val Glu
            245                 250                 255


Arg Ile Ser Thr Glu Ser Pro Ala Ala Pro Ala Leu Leu Leu Ala Asp
            260                 265                 270


Val Pro Ser Glu Ser Pro Pro Arg Arg Gln Glu Ala Ala Ala Pro Ser
            275                 280                 285


Glu Gly Glu Ser Ser Gly Asp Pro Thr Gln Ser Pro Asp Ala Ala Pro
            290                 295                 300


Gln Cys Pro Ala Gly Ala Asn Pro Asn Pro Ile Tyr Gln Val Leu
305                 310                 315
```

<210> 11
<211> 1427
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (43)..(810)

<400> 11
```
cctctcgctg ccgtccaggt gcaccgcctg cctctcagca gg atg gac gtg atg        54
                                              Met Asp Val Met
                                               1
```

```
gat ggc tgc cag ttc tca cct tct gag tac ttc tac gac ggc tcc tgc       102
Asp Gly Cys Gln Phe Ser Pro Ser Glu Tyr Phe Tyr Asp Gly Ser Cys
5                   10                  15                  20


ata ccg tcc ccc gag ggt gaa ttt ggg gac gag ttt gtg ccg cga gtg       150
Ile Pro Ser Pro Glu Gly Glu Phe Gly Asp Glu Phe Val Pro Arg Val
                25                  30                  35


gct gcc ttc gga gcg cac aaa gca gag ctg cag ggc tca gat gag gac       198
Ala Ala Phe Gly Ala His Lys Ala Glu Leu Gln Gly Ser Asp Glu Asp
                40                  45                  50


gag cac gtg cga gcg cct acc ggc cac cac cag gct ggt cac tgc ctc       246
Glu His Val Arg Ala Pro Thr Gly His His Gln Ala Gly His Cys Leu
                55                  60                  65


atg tgg gcc tgc aaa gcc tgc aag agg aag tcc acc acc atg gat cgg       294
Met Trp Ala Cys Lys Ala Cys Lys Arg Lys Ser Thr Thr Met Asp Arg
                70                  75                  80


cgg aag gca gcc act atg cgc gag cgg agg cgc ctg aag aag gtc aac       342
Arg Lys Ala Ala Thr Met Arg Glu Arg Arg Arg Leu Lys Lys Val Asn
85                  90                  95                  100


cag gct ttc gaa acc ctc aag agg tgt acc acg acc aac ccc aac cag       390
Gln Ala Phe Glu Thr Leu Lys Arg Cys Thr Thr Thr Asn Pro Asn Gln
                105                 110                 115


agg ctg ccc aag gtg gag atc ctc agg aat gcc atc cgc tac atc gag       438
Arg Leu Pro Lys Val Glu Ile Leu Arg Asn Ala Ile Arg Tyr Ile Glu
                120                 125                 130


agc ctg cag gag ttg ctg aga gag cag gtg gag aac tac tat agc ctg       486
Ser Leu Gln Glu Leu Leu Arg Glu Gln Val Glu Asn Tyr Tyr Ser Leu
                135                 140                 145
```

ccg gga cag agc tgc tcg gag ccc acc agc ccc acc tcc aac tgc tct   534
Pro Gly Gln Ser Cys Ser Glu Pro Thr Ser Pro Thr Ser Asn Cys Ser
        150   155   160

gat ggc atg ccc gaa tgt aac agt cct gtc tgg tcc aga aag agc agt   582
Asp Gly Met Pro Glu Cys Asn Ser Pro Val Trp Ser Arg Lys Ser Ser
    165   170   175   180

act ttt gac agc atc tac tgt cct gat gta tca aat gta tat gcc aca   630
Thr Phe Asp Ser Ile Tyr Cys Pro Asp Val Ser Asn Val Tyr Ala Thr
                185   190   195

gat aaa aac tcc tta tcc agc ttg gat tgc tta tcc aac ata gtg gac   678
Asp Lys Asn Ser Leu Ser Ser Leu Asp Cys Leu Ser Asn Ile Val Asp
                200   205   210

cgg atc acc tcc tca gag caa cct ggg ttg cct ctc cag gat ctg gct   726
Arg Ile Thr Ser Ser Glu Gln Pro Gly Leu Pro Leu Gln Asp Leu Ala
        215   220   225

tct ctc tct cca gtt gcc agc acc gat tca cag cct cga act cca ggg   774
Ser Leu Ser Pro Val Ala Ser Thr Asp Ser Gln Pro Arg Thr Pro Gly
    230   235   240

gct tct agt tcc agg ctt atc tat cat gtg cta tga actaattttc   820
Ala Ser Ser Ser Arg Leu Ile Tyr His Val Leu
245   250   255

tggtctatat gacttcttcc aggagggcct aatacacagg acgaagaagg cttcaaaaag   880

tcccaaacca agacaacatg tacataaaga tttcttttca gttgtaaatt tgtaaagatt   940

accttgccac tttataagaa agtgtattta actaaaaagt catcattgca aataatactt   1000

tcttcttctt tattattctt tgcttagata ttaatacata gttccagtaa tactatttct   1060

gataggggc cattgattga gggtagcttg ttcgaatgct taacttatat atacatatat   1120

atatattata aatattgctc atcaaaatgt ctctggtgtt tagagcttta ttttttctt   1180

taaaacatta aaacagctga gaatcagtta aatggaattt taaatatatt taactatttc   1240

ttttctcttt aatcctttag ttatattgta ttaaataaaa atataatact gcctaatgta   1300

tatattttga tcttttcttg taagaaatgt atcttttaaa tgtaagcaca aaatagtact   1360

ttgtggatca tttcaagata taagaaattt tggaaattcc accataaata aaattttta   1420

ctacaag   1427

<210> 12
<211> 255
<212> PRT
<213> Homo sapiens

<400> 12

Met Asp Val Met Asp Gly Cys Gln Phe Ser Pro Ser Glu Tyr Phe Tyr
1   5   10   15

Asp Gly Ser Cys Ile Pro Ser Pro Glu Gly Glu Phe Gly Asp Glu Phe
            20   25   30

Val Pro Arg Val Ala Ala Phe Gly Ala His Lys Ala Glu Leu Gln Gly
        35   40   45

Ser Asp Glu Asp Glu His Val Arg Ala Pro Thr Gly His His Gln Ala

                50   55   60

Gly His Cys Leu Met Trp Ala Cys Lys Ala Cys Lys Arg Lys Ser Thr
65   70   75   80

Thr Met Asp Arg Arg Lys Ala Ala Thr Met Arg Glu Arg Arg Arg Leu
                    85   90   95

Lys Lys Val Asn Gln Ala Phe Glu Thr Leu Lys Arg Cys Thr Thr Thr
                    100   105   110

Asn Pro Asn Gln Arg Leu Pro Lys Val Glu Ile Leu Arg Asn Ala Ile
                    115   120   125

Arg Tyr Ile Glu Ser Leu Gln Glu Leu Leu Arg Glu Gln Val Glu Asn
          130   135   140

Tyr Tyr Ser Leu Pro Gly Gln Ser Cys Ser Glu Pro Thr Ser Pro Thr
145   150   155   160

Ser Asn Cys Ser Asp Gly Met Pro Glu Cys Asn Ser Pro Val Trp Ser
                    165   170   175

Arg Lys Ser Ser Thr Phe Asp Ser Ile Tyr Cys Pro Asp Val Ser Asn
                    180   185   190

Val Tyr Ala Thr Asp Lys Asn Ser Leu Ser Ser Leu Asp Cys Leu Ser

```
            195              200              205
```

```
Asn Ile Val Asp Arg Ile Thr Ser Ser Glu Gln Pro Gly Leu Pro Leu
    210              215              220
```

```
Gln Asp Leu Ala Ser Leu Ser Pro Val Ala Ser Thr Asp Ser Gln Pro
225              230              235              240
```

```
Arg Thr Pro Gly Ala Ser Ser Ser Arg Leu Ile Tyr His Val Leu
            245              250              255
```

```
<210>  13
<211>  675
<212>  DNA
<213>  Homo sapiens
```

```
<220>
<221>  CDS
<222>  (1)..(675)
```

```
<400>  13
atg gag ctg tat gag aca tcc ccc tac ttc tac cag gaa ccc cgc ttc        48
Met Glu Leu Tyr Glu Thr Ser Pro Tyr Phe Tyr Gln Glu Pro Arg Phe
1               5               10              15
```

```
tat gat ggg gaa aac tac ctg cct gtc cac ctc cag ggc ttc gaa cca       96
Tyr Asp Gly Glu Asn Tyr Leu Pro Val His Leu Gln Gly Phe Glu Pro
                20              25              30
```

```
cca ggc tac gag cgg acg gag ctc acc ctg agc ccc gag gcc cca ggg      144
Pro Gly Tyr Glu Arg Thr Glu Leu Thr Leu Ser Pro Glu Ala Pro Gly
```

　　　　　35　　　　　　　　　　40　　　　　　　　　　45

ccc ctt gag gac aag ggg ctg ggg acc ccc gag cac tgt cca ggc cag   192
Pro Leu Glu Asp Lys Gly Leu Gly Thr Pro Glu His Cys Pro Gly Gln
　　50　　　　　　　　　　55　　　　　　　　　　60

tgc ctg ccg tgg gcg tgt aag gtg tgt aag agg aag tcg gtg tcc gtg   240
Cys Leu Pro Trp Ala Cys Lys Val Cys Lys Arg Lys Ser Val Ser Val
65　　　　　　　　　70　　　　　　　　　75　　　　　　　　　80

gac cgg cgg cgg gcg gcc aca ctg agg gag aag cgc agg ctc aag aag   288
Asp Arg Arg Arg Ala Ala Thr Leu Arg Glu Lys Arg Arg Leu Lys Lys
　　　　　　85　　　　　　　　　90　　　　　　　　　95

gtg aat gag gcc ttc gag gcc ctg aag aga agc acc ctg ctc aac ccc   336
Val Asn Glu Ala Phe Glu Ala Leu Lys Arg Ser Thr Leu Leu Asn Pro
　　　　　100　　　　　　　　　105　　　　　　　　　110

aac cag cgg ctg ccc aag gtg gag atc ctg cgc agt gcc atc cag tac   384
Asn Gln Arg Leu Pro Lys Val Glu Ile Leu Arg Ser Ala Ile Gln Tyr
　　　　　115　　　　　　　　　120　　　　　　　　　125

atc gag cgc ctc cag gcc ctg ctc agc tcc ctc aac cag gag gag cgt   432
Ile Glu Arg Leu Gln Ala Leu Leu Ser Ser Leu Asn Gln Glu Glu Arg
　　130　　　　　　　　　135　　　　　　　　　140

gac ctc cgc tac cgg ggc ggg ggc ggg ccc cag cca ggg gtg ccc agc   480
Asp Leu Arg Tyr Arg Gly Gly Gly Gly Pro Gln Pro Gly Val Pro Ser
145　　　　　　　　　150　　　　　　　　　155　　　　　　　　　160

gaa tgc agc tct cac agc gcc tcc tgc agt cca gag tgg ggc agt gca   528
Glu Cys Ser Ser His Ser Ala Ser Cys Ser Pro Glu Trp Gly Ser Ala
　　　　　　165　　　　　　　　　170　　　　　　　　　175

ctg gag ttc agc gcc aac cca ggg gat cat ctg ctc acg gct gac cct   576
Leu Glu Phe Ser Ala Asn Pro Gly Asp His Leu Leu Thr Ala Asp Pro

                    180   185   190

aca gat gcc cac aac ctg cac tcc ctc acc tcc atc gtg gac agc atc   624
Thr Asp Ala His Asn Leu His Ser Leu Thr Ser Ile Val Asp Ser Ile
        195   200   205

aca gtg gaa gat gtg tct gtg gcc ttc cca gat gaa acc atg ccc aac   672
Thr Val Glu Asp Val Ser Val Ala Phe Pro Asp Glu Thr Met Pro Asn
        210   215   220

tag   675

<210> 14
<211> 224
<212> PRT
<213> Homo sapiens

<400> 14

Met Glu Leu Tyr Glu Thr Ser Pro Tyr Phe Tyr Gln Glu Pro Arg Phe
1   5   10   15

Tyr Asp Gly Glu Asn Tyr Leu Pro Val His Leu Gln Gly Phe Glu Pro
            20   25   30

Pro Gly Tyr Glu Arg Thr Glu Leu Thr Leu Ser Pro Glu Ala Pro Gly
        35   40   45

Pro Leu Glu Asp Lys Gly Leu Gly Thr Pro Glu His Cys Pro Gly Gln
        50   55   60

Cys Leu Pro Trp Ala Cys Lys Val Cys Lys Arg Lys Ser Val Ser Val
65   70   75   80

Asp Arg Arg Arg Ala Ala Thr Leu Arg Glu Lys Arg Arg Leu Lys Lys
                    85   90   95

Val Asn Glu Ala Phe Glu Ala Leu Lys Arg Ser Thr Leu Leu Asn Pro
                    100   105   110

Asn Gln Arg Leu Pro Lys Val Glu Ile Leu Arg Ser Ala Ile Gln Tyr
                    115   120   125

Ile Glu Arg Leu Gln Ala Leu Leu Ser Ser Leu Asn Gln Glu Glu Arg
                    130   135   140

Asp Leu Arg Tyr Arg Gly Gly Gly Gly Pro Gln Pro Gly Val Pro Ser
145   150   155   160

Glu Cys Ser Ser His Ser Ala Ser Cys Ser Pro Glu Trp Gly Ser Ala
                    165   170   175

Leu Glu Phe Ser Ala Asn Pro Gly Asp His Leu Leu Thr Ala Asp Pro
                    180   185   190

Thr Asp Ala His Asn Leu His Ser Leu Thr Ser Ile Val Asp Ser Ile
                    195   200   205

Thr Val Glu Asp Val Ser Val Ala Phe Pro Asp Glu Thr Met Pro Asn
    210   215   220

<210> 15
<211> 3935
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (373)..(1902)

<400> 15
ggagagccga aagcggagct cgaaactgac tggaaacttc agtggcgcgg agactcgcca   60

gtttcaaccc cggaaacttt tctttgcagg aggagaagag aaggggtgca agcgccccca   120

cttttgctct ttttcctccc ctcctcctcc tctccaattc gcctcccccc acttggagcg   180

ggcagctgtg aactggccac cccgcgcctt cctaagtgct cgccgcggta gccggccgac   240

gcgccagctt ccccgggagc cgcttgctcc gcatccgggc agccgagggg agaggagccc   300

gcgcctcgag tccccgagcc gccgcggctt ctcgcctttc ccggccacca gcccccctgcc   360

ccgggcccgc gt atg aat ctc ctg gac ccc ttc atg aag atg acc gac gag   411
            Met Asn Leu Leu Asp Pro Phe Met Lys Met Thr Asp Glu
            1   5   10

cag gag aag ggc ctg tcc ggc gcc ccc agc ccc acc atg tcc gag gac   459
Gln Glu Lys Gly Leu Ser Gly Ala Pro Ser Pro Thr Met Ser Glu Asp
    15   20   25

tcc gcg ggc tcg ccc tgc ccg tcg ggc tcc ggc tcg gac acc gag aac   507

```
Ser Ala Gly Ser Pro Cys Pro Ser Gly Ser Gly Ser Asp Thr Glu Asn
30              35              40              45
```

```
acg cgg ccc cag gag aac acg ttc ccc aag ggc gag ccc gat ctg aag    555
Thr Arg Pro Gln Glu Asn Thr Phe Pro Lys Gly Glu Pro Asp Leu Lys
            50              55              60
```

```
aag gag agc gag gag gac aag ttc ccc gtg tgc atc cgc gag gcg gtc    603
Lys Glu Ser Glu Glu Asp Lys Phe Pro Val Cys Ile Arg Glu Ala Val
            65              70              75
```

```
agc cag gtg ctc aaa ggc tac gac tgg acg ctg gtg ccc atg ccg gtg    651
Ser Gln Val Leu Lys Gly Tyr Asp Trp Thr Leu Val Pro Met Pro Val
            80              85              90
```

```
cgc gtc aac ggc tcc agc aag aac aag ccg cac gtc aag cgg ccc atg    699
Arg Val Asn Gly Ser Ser Lys Asn Lys Pro His Val Lys Arg Pro Met
            95              100             105
```

```
aac gcc ttc atg gtg tgg gcg cag gcg gcg cgc agg aag ctc gcg gac    747
Asn Ala Phe Met Val Trp Ala Gln Ala Ala Arg Arg Lys Leu Ala Asp
110             115             120             125
```

```
cag tac ccg cac ttg cac aac gcc gag ctc agc aag acg ctg ggc aag    795
Gln Tyr Pro His Leu His Asn Ala Glu Leu Ser Lys Thr Leu Gly Lys
                130             135             140
```

```
ctc tgg aga ctt ctg aac gag agc gag aag cgg ccc ttc gtg gag gag    843
Leu Trp Arg Leu Leu Asn Glu Ser Glu Lys Arg Pro Phe Val Glu Glu
                145             150             155
```

```
gcg gag cgg ctg cgc gtg cag cac aag aag gac cac ccg gat tac aag    891
Ala Glu Arg Leu Arg Val Gln His Lys Lys Asp His Pro Asp Tyr Lys
                160             165             170
```

```
tac cag ccg cgg cgg agg aag tcg gtg aag aac ggg cag gcg gag gca    939
```

```
        Tyr Gln Pro Arg Arg Arg Lys Ser Val Lys Asn Gly Gln Ala Glu Ala
            175                 180                 185


        gag gag gcc acg gag cag acg cac atc tcc ccc aac gcc atc ttc aag      987
        Glu Glu Ala Thr Glu Gln Thr His Ile Ser Pro Asn Ala Ile Phe Lys
        190                 195                 200                 205


        gcg ctg cag gcc gac tcg cca cac tcc tcc tcc ggc atg agc gag gtg      1035
        Ala Leu Gln Ala Asp Ser Pro His Ser Ser Ser Gly Met Ser Glu Val
                        210                 215                 220


        cac tcc ccc ggc gag cac tcg ggg caa tcc cag ggc cca ccg acc cca      1083
        His Ser Pro Gly Glu His Ser Gly Gln Ser Gln Gly Pro Pro Thr Pro
                    225                 230                 235


        ccc acc acc ccc aaa acc gac gtg cag ccg ggc aag gct gac ctg aag      1131
        Pro Thr Thr Pro Lys Thr Asp Val Gln Pro Gly Lys Ala Asp Leu Lys
                    240                 245                 250


        cga gag ggg cgc ccc ttg cca gag ggg ggc aga cag ccc cct atc gac      1179
        Arg Glu Gly Arg Pro Leu Pro Glu Gly Gly Arg Gln Pro Pro Ile Asp
            255                 260                 265


        ttc cgc gac gtg gac atc ggc gag ctg agc agc gac gtc atc tcc aac      1227
        Phe Arg Asp Val Asp Ile Gly Glu Leu Ser Ser Asp Val Ile Ser Asn
        270                 275                 280                 285


        atc gag acc ttc gat gtc aac gag ttt gac cag tac ctg ccg ccc aac      1275
        Ile Glu Thr Phe Asp Val Asn Glu Phe Asp Gln Tyr Leu Pro Pro Asn
                        290                 295                 300


        ggc cac ccg ggg gtg ccg gcc acg cac ggc cag gtc acc tac acg ggc      1323
        Gly His Pro Gly Val Pro Ala Thr His Gly Gln Val Thr Tyr Thr Gly
                    305                 310                 315


        agc tac ggc atc agc agc acc gcg gcc acc ccg gcg agc gcg ggc cac      1371
```

```
       Ser Tyr Gly Ile Ser Ser Thr Ala Ala Thr Pro Ala Ser Ala Gly His
           320             325             330


gtg tgg atg tcc aag cag cag gcg ccg ccg cca ccc ccg cag cag ccc       1419
Val Trp Met Ser Lys Gln Gln Ala Pro Pro Pro Pro Gln Gln Pro
    335             340             345


cca cag gcc ccg ccg gcc ccg cag gcg ccc ccg cag ccg cag gcg gcg       1467
Pro Gln Ala Pro Pro Ala Pro Gln Ala Pro Pro Gln Pro Gln Ala Ala
350             355             360             365


ccc cca cag cag ccg gcg gca ccc ccg cag cag cca cag gcg cac acg       1515
Pro Pro Gln Gln Pro Ala Ala Pro Pro Gln Gln Pro Gln Ala His Thr
                370             375             380


ctg acc acg ctg agc agc gag ccg ggc cag tcc cag cga acg cac atc       1563
Leu Thr Thr Leu Ser Ser Glu Pro Gly Gln Ser Gln Arg Thr His Ile
            385             390             395


aag acg gag cag ctg agc ccc agc cac tac agc gag cag cag cag cac       1611
Lys Thr Glu Gln Leu Ser Pro Ser His Tyr Ser Glu Gln Gln Gln His
        400             405             410


tcg ccc caa cag atc gcc tac agc ccc ttc aac ctc cca cac tac agc       1659
Ser Pro Gln Gln Ile Ala Tyr Ser Pro Phe Asn Leu Pro His Tyr Ser
    415             420             425


ccc tcc tac ccg ccc atc acc cgc tca cag tac gac tac acc gac cac       1707
Pro Ser Tyr Pro Pro Ile Thr Arg Ser Gln Tyr Asp Tyr Thr Asp His
430             435             440             445


cag aac tcc agc tcc tac tac agc cac gcg gca ggc cag ggc acc ggc       1755
Gln Asn Ser Ser Ser Tyr Tyr Ser His Ala Ala Gly Gln Gly Thr Gly
                450             455             460


ctc tac tcc acc ttc acc tac atg aac ccc gct cag cgc ccc atg tac       1803
```

```
Leu Tyr Ser Thr Phe Thr Tyr Met Asn Pro Ala Gln Arg Pro Met Tyr
          465             470             475


acc ccc atc gcc gac acc tct ggg gtc cct tcc atc ccg cag acc cac    1851
Thr Pro Ile Ala Asp Thr Ser Gly Val Pro Ser Ile Pro Gln Thr His
          480             485             490


agc ccc cag cac tgg gaa caa ccc gtc tac aca cag ctc act cga cct    1899
Ser Pro Gln His Trp Glu Gln Pro Val Tyr Thr Gln Leu Thr Arg Pro
          495             500             505


tga ggaggcctcc cacgaagggc gaagatggcc gagatgatcc taaaaataac         1952


cgaagaaaga gaggaccaac cagaattccc tttggacatt tgtgtttttt tgtttttta   2012


ttttgttttg tttttcttc ttcttcttct tccttaaaga catttaagct aaaggcaact   2072


cgtacccaaa tttccaagac acaaacatga cctatccaag cgcattaccc acttgtggcc   2132


aatcagtggc caggccaacc ttggctaaat ggagcagcga aatcaacgag aaactggact   2192


ttttaaaccc tcttcagagc aagcgtggag gatgatggag aatcgtgtga tcagtgtgct   2252


aaatctctct gcctgtttgg actttgtaat tatttttta gcagtaatta aagaaaaaag   2312


tcctctgtga ggaatattct ctattttaaa tatttttagt atgtactgtg tatgattcat   2372


taccattttg aggggattta tacatatttt tagataaaat taaatgctct tatttttcca   2432


acagctaaac tactcttagt tgaacagtgt gccctagctt ttcttgcaac cagagtattt   2492


ttgtacagat ttgctttctc ttacaaaaag aaaaaaaaaa tcctgttgta ttaacattta   2552


aaaacagaat tgtgttatgt gatcagtttt gggggttaac tttgcttaat tcctcaggct   2612


ttgcgattta aggaggagct gccttaaaaa aaaataaagg ccttattttg caattatggg   2672
```

```
agtaaacaat agtctagaga agcatttggt aagctttatc atatatatat ttttttaaaga    2732

agagaaaaac accttgagcc ttaaaacggt gctgctggga aacatttgca ctctttttagt    2792

gcatttcctc ctgcctttgc ttgttcactg cagtcttaag aaagaggtaa aaggcaagca    2852

aaggagatga aatctgttct gggaatgttt cagcagccaa taagtgcccg agcacactgc    2912

ccccggttgc ctgcctgggc cccatgtgga aggcagatgc ctgctcgctc tgtcacctgt    2972

gcctctcaga acaccagcag ttaaccttca agacattcca cttgctaaaa ttatttattt    3032

tgtaaggaga ggttttaatt aaaacaaaaa aaaattcttt ttttttttttt tttccaattt   3092

taccttcttt aaaataggtt gttggagctt tcctcaaagg gtatggtcat ctgttgttaa, ,3152

attatgttct taactgtaac cagtttttt ttatttatct cttaatcttt tttttattat    3212

taaaagcaag tttctttgta ttcctcaccc tagatttgta taaatgcctt tttgtccatc    3272

cctttttttct ttgttgtttt tgttgaaaac aaactggaaa cttgtttctt ttttttgtata  3332

aatgagagat tgcaaatgta gtgtatcact gagtcatttg cagtgttttc tgccacagac    3392

ctttgggctg ccttatattg tgtgtgtgtg tgggtgtgtg tgtgttttga cacaaaaaca    3452

atgcaagcat gtgtcatcca tatttctcta catcttctct tggagtgagg gaggctacct    3512

ggaggggatc agcccactga cagaccttaa tcttaattac tgctgtggct agagagtttg    3572

aggattgctt tttaaaaaag acagcaaact tttttttttta tttaaaaaaa gatatattaa   3632

cagtttttaga agtcagtaga ataaaatctt aaagcactca taatatggca tccttcaatt   3692

tctgtataaa agcagatctt tttaaaaaga tacttctgta acttaagaaa cctggcattt    3752
```

aaatcatatt ttgtctttag gtaaaagctt tggtttgtgt tcgtgttttg tttgtttcac   3812

ttgtttccct cccagcccca aaccttttgt tctctccgtg aaacttacct ttccctttttt   3872

ctttctcttt ttttttttttg tatattattg tttacaataa atatacattg cattaaaaag   3932

aaa   3935

<210> 16
<211> 509
<212> PRT
<213> Homo sapiens

<400> 16

Met Asn Leu Leu Asp Pro Phe Met Lys Met Thr Asp Glu Gln Glu Lys
1   5   10   15

Gly Leu Ser Gly Ala Pro Ser Pro Thr Met Ser Glu Asp Ser Ala Gly
          20   25   30

Ser Pro Cys Pro Ser Gly Ser Gly Ser Asp Thr Glu Asn Thr Arg Pro
         35   40   45

Gln Glu Asn Thr Phe Pro Lys Gly Glu Pro Asp Leu Lys Lys Glu Ser
         50   55   60

Glu Glu Asp Lys Phe Pro Val Cys Ile Arg Glu Ala Val Ser Gln Val
65   70   75   80

Leu Lys Gly Tyr Asp Trp Thr Leu Val Pro Met Pro Val Arg Val Asn
                85   90   95

Gly Ser Ser Lys Asn Lys Pro His Val Lys Arg Pro Met Asn Ala Phe
            100   105   110

Met Val Trp Ala Gln Ala Ala Arg Arg Lys Leu Ala Asp Gln Tyr Pro
            115   120   125

His Leu His Asn Ala Glu Leu Ser Lys Thr Leu Gly Lys Leu Trp Arg
        130   135   140

Leu Leu Asn Glu Ser Glu Lys Arg Pro Phe Val Glu Glu Ala Glu Arg
145   150   155   160

Leu Arg Val Gln His Lys Lys Asp His Pro Asp Tyr Lys Tyr Gln Pro
            165   170   175

Arg Arg Arg Lys Ser Val Lys Asn Gly Gln Ala Glu Ala Glu Glu Ala
            180   185   190

Thr Glu Gln Thr His Ile Ser Pro Asn Ala Ile Phe Lys Ala Leu Gln
            195   200   205

Ala Asp Ser Pro His Ser Ser Ser Gly Met Ser Glu Val His Ser Pro
    210   215   220

Gly Glu His Ser Gly Gln Ser Gln Gly Pro Pro Thr Pro Pro Thr Thr
225   230   235   240

Pro Lys Thr Asp Val Gln Pro Gly Lys Ala Asp Leu Lys Arg Glu Gly
            245   250   255

Arg Pro Leu Pro Glu Gly Gly Arg Gln Pro Pro Ile Asp Phe Arg Asp
            260   265   270

Val Asp Ile Gly Glu Leu Ser Ser Asp Val Ile Ser Asn Ile Glu Thr
            275   280   285

Phe Asp Val Asn Glu Phe Asp Gln Tyr Leu Pro Pro Asn Gly His Pro
    290   295   300

Gly Val Pro Ala Thr His Gly Gln Val Thr Tyr Thr Gly Ser Tyr Gly
305   310   315   320

Ile Ser Ser Thr Ala Ala Thr Pro Ala Ser Ala Gly His Val Trp Met
            325   330   335

Ser Lys Gln Gln Ala Pro Pro Pro Pro Gln Gln Pro Pro Gln Ala
            340   345   350

Pro Pro Ala Pro Gln Ala Pro Pro Gln Pro Gln Ala Ala Pro Pro Gln
            355   360   365

Gln Pro Ala Ala Pro Pro Gln Gln Pro Gln Ala His Thr Leu Thr Thr
    370   375   380

Leu Ser Ser Glu Pro Gly Gln Ser Gln Arg Thr His Ile Lys Thr Glu
385   390   395   400

Gln Leu Ser Pro Ser His Tyr Ser Glu Gln Gln Gln His Ser Pro Gln
              405   410   415

Gln Ile Ala Tyr Ser Pro Phe Asn Leu Pro His Tyr Ser Pro Ser Tyr
              420   425   430

Pro Pro Ile Thr Arg Ser Gln Tyr Asp Tyr Thr Asp His Gln Asn Ser
          435   440   445

Ser Ser Tyr Tyr Ser His Ala Ala Gly Gln Gly Thr Gly Leu Tyr Ser
    450   455   460

Thr Phe Thr Tyr Met Asn Pro Ala Gln Arg Pro Met Tyr Thr Pro Ile
465   470   475   480

Ala Asp Thr Ser Gly Val Pro Ser Ile Pro Gln Thr His Ser Pro Gln
              485   490   495

His Trp Glu Gln Pro Val Tyr Thr Gln Leu Thr Arg Pro
          500   505

<210> 17
<211> 5060
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (158)..(4621)

<400> 17
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acgcagagcg ctgctgggct gccgggtctc ccgcttcctc ctcctgctcc aagggcctcc      60

tgcatgaggg cgcggtagag acccggaccc gcgccgtgct cctgccgttt cgctgcgctc     120

cgcccgggcc cggctcagcc aggccccgcg gtgagcc atg att cgc ctc ggg gct     175
                                         Met Ile Arg Leu Gly Ala
                                         1               5

ccc cag tcg ctg gtg ctg ctg acg ctg ctc gtc gcc gct gtc ctt cgg     223
Pro Gln Ser Leu Val Leu Leu Thr Leu Leu Val Ala Ala Val Leu Arg
            10               15                  20

tgt cag ggc cag gat gtc cag gag gct ggc agc tgt gtg cag gat ggg     271
Cys Gln Gly Gln Asp Val Gln Glu Ala Gly Ser Cys Val Gln Asp Gly
        25                  30                  35

cag agg tat aat gat aag gat gtg tgg aag ccg gag ccc tgc cgg atc     319
Gln Arg Tyr Asn Asp Lys Asp Val Trp Lys Pro Glu Pro Cys Arg Ile
    40                  45                  50

tgt gtc tgt gac act ggg act gtc ctc tgc gac gac ata atc tgt gaa     367
Cys Val Cys Asp Thr Gly Thr Val Leu Cys Asp Asp Ile Ile Cys Glu
55                  60                  65                  70
```

```
gac gtg aaa gac tgc ctc agc cct gag atc ccc ttc gga gag tgc tgc        415
Asp Val Lys Asp Cys Leu Ser Pro Glu Ile Pro Phe Gly Glu Cys Cys
            75                  80                  85


ccc atc tgc cca act gac ctc gcc act gcc agt ggg caa cca gga cca        463
Pro Ile Cys Pro Thr Asp Leu Ala Thr Ala Ser Gly Gln Pro Gly Pro
            90                  95                  100


aag gga cag aaa gga gaa cct gga gac atc aag gat att gta gga ccc        511
Lys Gly Gln Lys Gly Glu Pro Gly Asp Ile Lys Asp Ile Val Gly Pro
            105                 110                 115


aaa gga cct cct ggg cct cag gga cct gca ggg gaa caa gga ccc aga        559
Lys Gly Pro Pro Gly Pro Gln Gly Pro Ala Gly Glu Gln Gly Pro Arg
        120                 125                 130


ggg gat cgt ggt gac aaa ggt gaa aaa ggt gcc cct gga cct cgt ggc        607
Gly Asp Arg Gly Asp Lys Gly Glu Lys Gly Ala Pro Gly Pro Arg Gly
135                 140                 145                 150


aga gat gga gaa cct ggg acc cct gga aat cct ggc ccc cct ggt cct        655
Arg Asp Gly Glu Pro Gly Thr Pro Gly Asn Pro Gly Pro Pro Gly Pro
                155                 160                 165


ccc ggc ccc cct ggt ccc cct ggt ctt ggt gga aac ttt gct gcc cag        703
Pro Gly Pro Pro Gly Pro Pro Gly Leu Gly Gly Asn Phe Ala Ala Gln
            170                 175                 180


atg gct gga gga ttt gat gaa aag gct ggt ggc gcc cag ttg gga gta        751
Met Ala Gly Gly Phe Asp Glu Lys Ala Gly Gly Ala Gln Leu Gly Val
            185                 190                 195


atg caa gga cca atg ggc ccc atg gga cct cga gga cct cca ggc cct        799
Met Gln Gly Pro Met Gly Pro Met Gly Pro Arg Gly Pro Pro Gly Pro
        200                 205                 210
```

```
gca ggt gct cct ggg cct caa gga ttt caa ggc aat cct ggt gaa cct        847
Ala Gly Ala Pro Gly Pro Gln Gly Phe Gln Gly Asn Pro Gly Glu Pro
215             220             225             230


ggt gaa cct ggt gtc tct ggt ccc atg ggt ccc cgt ggt cct cct ggt        895
Gly Glu Pro Gly Val Ser Gly Pro Met Gly Pro Arg Gly Pro Pro Gly
            235             240             245


ccc cct gga aag cct ggt gat gat ggt gaa gct gga aaa cct gga aaa        943
Pro Pro Gly Lys Pro Gly Asp Asp Gly Glu Ala Gly Lys Pro Gly Lys
            250             255             260


gct ggt gaa agg ggt ccg cct ggt cct cag ggt gct cgt ggt ttc cca        991
Ala Gly Glu Arg Gly Pro Pro Gly Pro Gln Gly Ala Arg Gly Phe Pro
            265             270             275


gga acc cca ggc ctt cct ggt gtc aaa ggt cac aga ggt tat cca ggc       1039
Gly Thr Pro Gly Leu Pro Gly Val Lys Gly His Arg Gly Tyr Pro Gly
    280             285             290


ctg gac ggt gct aag gga gag gcg ggt gct cct ggt gtg aag ggt gag       1087
Leu Asp Gly Ala Lys Gly Glu Ala Gly Ala Pro Gly Val Lys Gly Glu
295             300             305             310


agt ggt tcc ccg ggt gag aac gga tct ccg ggc cca atg ggt cct cgt       1135
Ser Gly Ser Pro Gly Glu Asn Gly Ser Pro Gly Pro Met Gly Pro Arg
            315             320             325


ggc ctg cct ggt gaa aga gga cgg act ggc cct gct ggc gct gcg ggt       1183
Gly Leu Pro Gly Glu Arg Gly Arg Thr Gly Pro Ala Gly Ala Ala Gly
            330             335             340


gcc cga ggc aac gat ggt cag cca ggc ccc gca ggt cct ccg ggt cct       1231
Ala Arg Gly Asn Asp Gly Gln Pro Gly Pro Ala Gly Pro Pro Gly Pro
    345             350             355
```

gtc ggt cct gct ggt ggt cct ggc ttc cct ggt gct cct gga gcc aag   1279
Val Gly Pro Ala Gly Gly Pro Gly Phe Pro Gly Ala Pro Gly Ala Lys
    360   365   370

ggt gaa gcc ggc ccc act ggt gcc cgt ggt cct gaa ggt gct caa ggt   1327
Gly Glu Ala Gly Pro Thr Gly Ala Arg Gly Pro Glu Gly Ala Gln Gly
375   380   385   390

cct cgc ggt gaa cct ggt act cct ggg tcc cct ggg cct gct ggt gcc   1375
Pro Arg Gly Glu Pro Gly Thr Pro Gly Ser Pro Gly Pro Ala Gly Ala
              395   400   405

tcc ggt aac cct gga aca gat gga att cct gga gcc aaa gga tct gct   1423
Ser Gly Asn Pro Gly Thr Asp Gly Ile Pro Gly Ala Lys Gly Ser Ala
              410   415   420

ggt gct cct ggc att gct ggt gct cct ggc ttc cct ggg cca cgg ggt   1471
Gly Ala Pro Gly Ile Ala Gly Ala Pro Gly Phe Pro Gly Pro Arg Gly
        425   430   435

cct cct ggc cct caa ggt gca act ggt cct ctg ggc ccg aaa ggt cag   1519
Pro Pro Gly Pro Gln Gly Ala Thr Gly Pro Leu Gly Pro Lys Gly Gln
    440   445   450

acg ggt gaa cct ggt att gct ggc ttc aaa ggt gaa caa ggc ccc aag   1567
Thr Gly Glu Pro Gly Ile Ala Gly Phe Lys Gly Glu Gln Gly Pro Lys
455   460   465   470

gga gaa cct ggc cct gct ggc ccc cag gga gcc cct gga ccc gct ggt   1615
Gly Glu Pro Gly Pro Ala Gly Pro Gln Gly Ala Pro Gly Pro Ala Gly
              475   480   485

gaa gaa ggc aag aga ggt gcc cgt gga gag cct ggt ggc gtt ggg ccc   1663
Glu Glu Gly Lys Arg Gly Ala Arg Gly Glu Pro Gly Gly Val Gly Pro
        490   495   500

atc ggt ccc cct gga gaa aga ggt gct ccc gga aac cgc ggt ttc cca   1711
Ile Gly Pro Pro Gly Glu Arg Gly Ala Pro Gly Asn Arg Gly Phe Pro
        505   510   515

ggt caa gat ggt ctg gca ggt ccc aag gga gcc cct gga gag cga ggg   1759
Gly Gln Asp Gly Leu Ala Gly Pro Lys Gly Ala Pro Gly Glu Arg Gly
        520   525   530

ccc agt ggt ctt gct ggc ccc aag gga gcc aac ggt gac cct ggc cgt   1807
Pro Ser Gly Leu Ala Gly Pro Lys Gly Ala Asn Gly Asp Pro Gly Arg
535   540   545   550

cct gga gaa cct ggc ctt cct gga gcc cgg ggt ctc act ggc cgc cct   1855
Pro Gly Glu Pro Gly Leu Pro Gly Ala Arg Gly Leu Thr Gly Arg Pro
                555   560   565

ggt gat gct ggt cct caa ggc aaa gtt ggc cct tct gga gcc cct ggt   1903
Gly Asp Ala Gly Pro Gln Gly Lys Val Gly Pro Ser Gly Ala Pro Gly
              570   575   580

gaa gat ggt cgt cct gga cct cca ggt cct cag ggg gct cgt ggg cag   1951
Glu Asp Gly Arg Pro Gly Pro Pro Gly Pro Gln Gly Ala Arg Gly Gln
        585   590   595

cct ggt gtc atg ggt ttc cct ggc ccc aaa ggt gcc aac ggt gag cct   1999
Pro Gly Val Met Gly Phe Pro Gly Pro Lys Gly Ala Asn Gly Glu Pro
        600   605   610

ggc aaa gct ggt gag aag gga ctg cct ggt gct cct ggt ctg agg ggt   2047
Gly Lys Ala Gly Glu Lys Gly Leu Pro Gly Ala Pro Gly Leu Arg Gly
615   620   625   630

ctt cct ggc aaa gat ggt gag aca ggt gct gca gga ccc cct ggc cct   2095
Leu Pro Gly Lys Asp Gly Glu Thr Gly Ala Ala Gly Pro Pro Gly Pro
              635   640   645

gct gga cct gct ggt gaa cga ggc gag cag ggt gct cct ggg cca tct   2143
Ala Gly Pro Ala Gly Glu Arg Gly Glu Gln Gly Ala Pro Gly Pro Ser
         650   655   660

ggg ttc cag gga ctt cct ggc cct cct ggt ccc cca ggt gaa ggt gga   2191
Gly Phe Gln Gly Leu Pro Gly Pro Pro Gly Pro Pro Gly Glu Gly Gly
         665   670   675

aaa cca ggt gac cag ggt gtt ccc ggt gaa gct gga gcc cct ggc ctc   2239
Lys Pro Gly Asp Gln Gly Val Pro Gly Glu Ala Gly Ala Pro Gly Leu
         680   685   690

gtg ggt ccc agg ggt gaa cga ggt ttc cca ggt gaa cgt ggc tct ccc   2287
Val Gly Pro Arg Gly Glu Arg Gly Phe Pro Gly Glu Arg Gly Ser Pro
695   700   705   710

ggt gcc cag ggc ctc cag ggt ccc cgt ggc ctc ccc ggc act cct ggc   2335
Gly Ala Gln Gly Leu Gln Gly Pro Arg Gly Leu Pro Gly Thr Pro Gly
             715   720   725

act gat ggt ccc aaa ggt gca tct ggc cca gca ggc ccc cct ggc gca   2383
Thr Asp Gly Pro Lys Gly Ala Ser Gly Pro Ala Gly Pro Pro Gly Ala
             730   735   740

cag ggc cct cca ggt ctt cag gga atg cct ggc gag agg gga gca gct   2431
Gln Gly Pro Pro Gly Leu Gln Gly Met Pro Gly Glu Arg Gly Ala Ala
             745   750   755

ggt atc gct ggg ccc aaa ggc gac agg ggt gac gtt ggt gag aaa ggc   2479
Gly Ile Ala Gly Pro Lys Gly Asp Arg Gly Asp Val Gly Glu Lys Gly
         760   765   770

cct gag gga gcc cct gga aag gat ggt gga cga ggc ctg aca ggt ccc   2527
Pro Glu Gly Ala Pro Gly Lys Asp Gly Gly Arg Gly Leu Thr Gly Pro
775   780   785   790

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att ggc ccc cct ggc cca gct ggt gct aac ggc gag aag gga gaa gtt        2575
Ile Gly Pro Pro Gly Pro Ala Gly Ala Asn Gly Glu Lys Gly Glu Val
            795                 800                 805


gga cct cct ggt cct gca gga agt gct ggt gct cgt ggc gct ccg ggt        2623
Gly Pro Pro Gly Pro Ala Gly Ser Ala Gly Ala Arg Gly Ala Pro Gly
            810                 815                 820


gaa cgt gga gag act ggc ccc ccc gga cca gcg gga ttt gct ggg cct        2671
Glu Arg Gly Glu Thr Gly Pro Pro Gly Pro Ala Gly Phe Ala Gly Pro
            825                 830                 835


cct ggt gct gat ggc cag cct ggg gcc aag ggt gag caa gga gag gcc        2719
Pro Gly Ala Asp Gly Gln Pro Gly Ala Lys Gly Glu Gln Gly Glu Ala
            840                 845                 850


ggc cag aaa ggc gat gct ggt gcc cct ggt cct cag ggc ccc tct gga        2767
Gly Gln Lys Gly Asp Ala Gly Ala Pro Gly Pro Gln Gly Pro Ser Gly
855                 860                 865                 870


gca cct ggg cct cag ggt cct act gga gtg act ggt cct aaa gga gcc        2815
Ala Pro Gly Pro Gln Gly Pro Thr Gly Val Thr Gly Pro Lys Gly Ala
            875                 880                 885


cga ggt gcc caa ggc ccc ccg gga gcc act gga ttc cct gga gct gct        2863
Arg Gly Ala Gln Gly Pro Pro Gly Ala Thr Gly Phe Pro Gly Ala Ala
            890                 895                 900


ggc cgc gtt gga ccc cca ggc tcc aat ggc aac cct gga ccc cct ggt        2911
Gly Arg Val Gly Pro Pro Gly Ser Asn Gly Asn Pro Gly Pro Pro Gly
            905                 910                 915


ccc cct ggt cct tct gga aaa gat ggt ccc aaa ggt gct cga gga gac        2959
Pro Pro Gly Pro Ser Gly Lys Asp Gly Pro Lys Gly Ala Arg Gly Asp
            920                 925                 930
```

agc ggc ccc cct ggc cga gct ggt gaa ccc ggc ctc caa ggt cct gct   3007
Ser Gly Pro Pro Gly Arg Ala Gly Glu Pro Gly Leu Gln Gly Pro Ala
935   940   945   950

gga ccc cct ggc gag aag gga gag cct gga gat gac ggt ccc tct ggt   3055
Gly Pro Pro Gly Glu Lys Gly Glu Pro Gly Asp Asp Gly Pro Ser Gly
                    955   960   965

gcc gaa ggt cca cca ggt ccc cag ggt ctg gct ggt cag aga ggc atc   3103
Ala Glu Gly Pro Pro Gly Pro Gln Gly Leu Ala Gly Gln Arg Gly Ile
                970   975   980

gtc ggt ctg cct ggg caa cgt ggt gag aga gga ttc cct ggc ttg cct   3151
Val Gly Leu Pro Gly Gln Arg Gly Glu Arg Gly Phe Pro Gly Leu Pro
            985   990   995

ggc cca tcg ggt gag ccc ggc aag cag ggt gct cct gga gca tct   3196
Gly Pro Ser Gly Glu Pro Gly Lys Gln Gly Ala Pro Gly Ala Ser
        1000   1005   1010

gga gac aga ggt cct cct ggc ccc gtg ggt cct cct ggc ctg acg   3241
Gly Asp Arg Gly Pro Pro Gly Pro Val Gly Pro Pro Gly Leu Thr
        1015   1020   1025

ggt cct gca ggt gaa ccc gga cga gag gga agc ccc ggt gct gat   3286
Gly Pro Ala Gly Glu Pro Gly Arg Glu Gly Ser Pro Gly Ala Asp
        1030   1035   1040

ggc ccc cct ggc aga gat ggc gct gct gga gtc aag ggt gat cgt   3331
Gly Pro Pro Gly Arg Asp Gly Ala Ala Gly Val Lys Gly Asp Arg
        1045   1050   1055

ggt gag act ggt gct gtg gga gct cct gga gcc cct ggg ccc cct   3376
Gly Glu Thr Gly Ala Val Gly Ala Pro Gly Ala Pro Gly Pro Pro
        1060   1065   1070

```
ggc tcc  cct ggc ccc gct ggt  cca act ggc aag caa  gga gac aga      3421
Gly Ser  Pro Gly Pro Ala Gly  Pro Thr Gly Lys Gln  Gly Asp Arg
    1075             1080             1085


gga gaa  gct ggt gca caa ggc  ccc atg gga ccc tca  gga cca gct      3466
Gly Glu  Ala Gly Ala Gln Gly  Pro Met Gly Pro Ser  Gly Pro Ala
    1090             1095             1100


gga gcc  cgg gga atc cag ggt  cct caa ggc ccc aga  ggt gac aaa      3511
Gly Ala  Arg Gly Ile Gln Gly  Pro Gln Gly Pro Arg  Gly Asp Lys
    1105             1110             1115


gga gag  gct gga gag cct ggc  gag aga ggc ctg aag  gga cac cgt      3556
Gly Glu  Ala Gly Glu Pro Gly  Glu Arg Gly Leu Lys  Gly His Arg
    1120             1125             1130


ggc ttc  act ggt ctg cag ggt  ctg ccc ggc cct cct  ggt cct tct      3601
Gly Phe  Thr Gly Leu Gln Gly  Leu Pro Gly Pro Pro  Gly Pro Ser
    1135             1140             1145


gga gac  caa ggt gct tct ggt  cct gct ggt cct tct  ggc cct aga      3646
Gly Asp  Gln Gly Ala Ser Gly  Pro Ala Gly Pro Ser  Gly Pro Arg
    1150             1155             1160


ggt cct  cct ggc ccc gtc ggt  ccc tct ggc aaa gat  ggt gct aat      3691
Gly Pro  Pro Gly Pro Val Gly  Pro Ser Gly Lys Asp  Gly Ala Asn
    1165             1170             1175


gga atc  cct ggc ccc att ggg  cct cct ggt ccc cgt  gga cga tca      3736
Gly Ile  Pro Gly Pro Ile Gly  Pro Pro Gly Pro Arg  Gly Arg Ser
    1180             1185             1190


ggc gaa  acc ggt cct gct ggt  cct cct gga aat cct  ggg ccc cct      3781
Gly Glu  Thr Gly Pro Ala Gly  Pro Pro Gly Asn Pro  Gly Pro Pro
    1195             1200             1205
```

```
ggt cct  cca ggt ccc cct ggc  cct ggc atc gac atg  tcc gcc ttt      3826
Gly Pro  Pro Gly Pro Pro Gly  Pro Gly Ile Asp Met  Ser Ala Phe
    1210             1215              1220
```

```
gct ggc  tta ggc ccg aga gag  aag ggc ccc gac ccc  ctg cag tac      3871
Ala Gly  Leu Gly Pro Arg Glu  Lys Gly Pro Asp Pro  Leu Gln Tyr
    1225             1230              1235
```

```
atg cgg  gcc gac cag gca gcc  ggt ggc ctg aga cag  cat gac gcc      3916
Met Arg  Ala Asp Gln Ala Ala  Gly Gly Leu Arg Gln  His Asp Ala
    1240             1245              1250
```

```
gag gtg  gat gcc aca ctc aag  tcc ctc aac aac cag  att gag agc      3961
Glu Val  Asp Ala Thr Leu Lys  Ser Leu Asn Asn Gln  Ile Glu Ser
    1255             1260              1265
```

```
atc cgc  agc ccc gag ggc tcc  cgc aag aac cct gct  cgc acc tgc      4006
Ile Arg  Ser Pro Glu Gly Ser  Arg Lys Asn Pro Ala  Arg Thr Cys
    1270             1275              1280
```

```
aga gac  ctg aaa ctc tgc cac  cct gag tgg aag agt  gga gac tac      4051
Arg Asp  Leu Lys Leu Cys His  Pro Glu Trp Lys Ser  Gly Asp Tyr
    1285             1290              1295
```

```
tgg att  gac ccc aac caa ggc  tgc acc ttg gac gcc  atg aag gtt      4096
Trp Ile  Asp Pro Asn Gln Gly  Cys Thr Leu Asp Ala  Met Lys Val
    1300             1305              1310
```

```
ttc tgc  aac atg gag act ggc  gag act tgc gtc tac  ccc aat cca      4141
Phe Cys  Asn Met Glu Thr Gly  Glu Thr Cys Val Tyr  Pro Asn Pro
    1315             1320              1325
```

```
gca aac  gtt ccc aag aag aac  tgg tgg agc agc aag  agc aag gag      4186
Ala Asn  Val Pro Lys Lys Asn  Trp Trp Ser Ser Lys  Ser Lys Glu
    1330             1335              1340
```

```
aag aaa  cac atc tgg ttt gga  gaa acc atc aat ggt  ggc ttc cat      4231
Lys Lys  His Ile Trp Phe Gly  Glu Thr Ile Asn Gly  Gly Phe His
    1345              1350                  1355


ttc agc  tat gga gat gac aat  ctg gct ccc aac act  gcc aac gtc      4276
Phe Ser  Tyr Gly Asp Asp Asn  Leu Ala Pro Asn Thr  Ala Asn Val
    1360              1365                  1370


cag atg  acc ttc cta cgc ctg  ctg tcc acg gaa ggc  tcc cag aac      4321
Gln Met  Thr Phe Leu Arg Leu  Leu Ser Thr Glu Gly  Ser Gln Asn
    1375              1380                  1385


atc acc  tac cac tgc aag aac  agc att gcc tat ctg  gac gaa gca      4366
Ile Thr  Tyr His Cys Lys Asn  Ser Ile Ala Tyr Leu  Asp Glu Ala
    1390              1395                  1400


gct ggc  aac ctc aag aag gcc  ctg ctc atc cag ggc  tcc aat gac      4411
Ala Gly  Asn Leu Lys Lys Ala  Leu Leu Ile Gln Gly  Ser Asn Asp
    1405              1410                  1415


gtg gag  atc cgg gca gag ggc  aat agc agg ttc acg  tac act gcc      4456
Val Glu  Ile Arg Ala Glu Gly  Asn Ser Arg Phe Thr  Tyr Thr Ala
    1420              1425                  1430


ctg aag  gat ggc tgc acg aaa  cat acc ggt aag tgg  ggc aag act      4501
Leu Lys  Asp Gly Cys Thr Lys  His Thr Gly Lys Trp  Gly Lys Thr
    1435              1440                  1445


gtt atc  gag tac cgg tca cag  aag acc tca cgc ctc  ccc atc att      4546
Val Ile  Glu Tyr Arg Ser Gln  Lys Thr Ser Arg Leu  Pro Ile Ile
    1450              1455                  1460


gac att  gca ccc atg gac ata  gga ggg ccc gag cag  gaa ttc ggt      4591
Asp Ile  Ala Pro Met Asp Ile  Gly Gly Pro Glu Gln  Glu Phe Gly
    1465              1470                  1475
```

```
gtg gac  ata ggg ccg gtc tgc  ttc ttg taa aaacctgaac ccagaaacaa     4641
Val Asp  Ile Gly Pro Val Cys  Phe Leu
     1480                1485


cacaatccgt tgcaaaccca aaggacccaa gtactttcca atctcagtca ctctaggact   4701


ctgcactgaa tggctgacct gacctgatgt ccattcatcc caccctctca cagttcggac   4761


ttttctcccc tctctttcta agagacctga actgggcaga ctgcaaaata aaatctcggt   4821


gttctattta tttattgtct tcctgtaaga ccttcgggtc aaggcagagg caggaaacta   4881


actggtgtga gtcaaatgcc ccctgagtga ctgcccccag cccaggccag aagacctccc   4941


ttcaggtgcc gggcgcagga actgtgtgtg tcctacacaa tggtgctatt ctgtgtcaaa   5001


cacctctgta tttttaaaa catcaattga tattaaaaat gaaaagatta ttggaaagt    5060
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<210> 18
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<212> PRT
<213> Homo sapiens

<400> 18


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Met Ile Arg Leu Gly Ala Pro Gln Ser Leu Val Leu Leu Thr Leu Leu
1               5               10              15


Val Ala Ala Val Leu Arg Cys Gln Gly Gln Asp Val Gln Glu Ala Gly
            20              25              30


Ser Cys Val Gln Asp Gly Gln Arg Tyr Asn Asp Lys Asp Val Trp Lys
        35              40              45
```

Pro Glu Pro Cys Arg Ile Cys Val Cys Asp Thr Gly Thr Val Leu Cys
    50   55   60

Asp Asp Ile Ile Cys Glu Asp Val Lys Asp Cys Leu Ser Pro Glu Ile
65   70   75   80

Pro Phe Gly Glu Cys Cys Pro Ile Cys Pro Thr Asp Leu Ala Thr Ala
           85   90   95

Ser Gly Gln Pro Gly Pro Lys Gly Gln Lys Gly Glu Pro Gly Asp Ile
         100   105   110

Lys Asp Ile Val Gly Pro Lys Gly Pro Pro Gly Pro Gln Gly Pro Ala
         115   120   125

Gly Glu Gln Gly Pro Arg Gly Asp Arg Gly Asp Lys Gly Glu Lys Gly
    130   135   140

Ala Pro Gly Pro Arg Gly Arg Asp Gly Glu Pro Gly Thr Pro Gly Asn
145   150   155   160

Pro Gly Pro Pro Gly Pro Pro Gly Pro Pro Gly Pro Pro Gly Leu Gly
         165   170   175

Gly Asn Phe Ala Ala Gln Met Ala Gly Gly Phe Asp Glu Lys Ala Gly
         180   185   190

Gly Ala Gln Leu Gly Val Met Gln Gly Pro Met Gly Pro Met Gly Pro
        195   200   205

Arg Gly Pro Pro Gly Pro Ala Gly Ala Pro Gly Pro Gln Gly Phe Gln
        210   215   220

Gly Asn Pro Gly Glu Pro Gly Glu Pro Gly Val Ser Gly Pro Met Gly
225   230   235   240

Pro Arg Gly Pro Pro Gly Pro Pro Gly Lys Pro Gly Asp Asp Gly Glu
                245   250   255

Ala Gly Lys Pro Gly Lys Ala Gly Glu Arg Gly Pro Pro Gly Pro Gln
            260   265   270

Gly Ala Arg Gly Phe Pro Gly Thr Pro Gly Leu Pro Gly Val Lys Gly
        275   280   285

His Arg Gly Tyr Pro Gly Leu Asp Gly Ala Lys Gly Glu Ala Gly Ala
    290   295   300

Pro Gly Val Lys Gly Glu Ser Gly Ser Pro Gly Glu Asn Gly Ser Pro
305   310   315   320

Gly Pro Met Gly Pro Arg Gly Leu Pro Gly Glu Arg Gly Arg Thr Gly
                325   330   335

Pro Ala Gly Ala Ala Gly Ala Arg Gly Asn Asp Gly Gln Pro Gly Pro
         340   345   350

Ala Gly Pro Pro Gly Pro Val Gly Pro Ala Gly Gly Pro Gly Phe Pro
         355   360   365

Gly Ala Pro Gly Ala Lys Gly Glu Ala Gly Pro Thr Gly Ala Arg Gly
         370   375   380

Pro Glu Gly Ala Gln Gly Pro Arg Gly Glu Pro Gly Thr Pro Gly Ser
385   390   395   400

Pro Gly Pro Ala Gly Ala Ser Gly Asn Pro Gly Thr Asp Gly Ile Pro
         405   410   415

Gly Ala Lys Gly Ser Ala Gly Ala Pro Gly Ile Ala Gly Ala Pro Gly
         420   425   430

Phe Pro Gly Pro Arg Gly Pro Pro Gly Pro Gln Gly Ala Thr Gly Pro
         435   440   445

Leu Gly Pro Lys Gly Gln Thr Gly Glu Pro Gly Ile Ala Gly Phe Lys
         450   455   460

Gly Glu Gln Gly Pro Lys Gly Glu Pro Gly Pro Ala Gly Pro Gln Gly
465   470   475   480

Ala Pro Gly Pro Ala Gly Glu Glu Gly Lys Arg Gly Ala Arg Gly Glu
            485   490   495

Pro Gly Gly Val Gly Pro Ile Gly Pro Pro Gly Glu Arg Gly Ala Pro
            500   505   510

Gly Asn Arg Gly Phe Pro Gly Gln Asp Gly Leu Ala Gly Pro Lys Gly
            515   520   525

Ala Pro Gly Glu Arg Gly Pro Ser Gly Leu Ala Gly Pro Lys Gly Ala
            530   535   540

Asn Gly Asp Pro Gly Arg Pro Gly Glu Pro Gly Leu Pro Gly Ala Arg
545   550   555   560

Gly Leu Thr Gly Arg Pro Gly Asp Ala Gly Pro Gln Gly Lys Val Gly
            565   570   575

Pro Ser Gly Ala Pro Gly Glu Asp Gly Arg Pro Gly Pro Pro Gly Pro
            580   585   590

Gln Gly Ala Arg Gly Gln Pro Gly Val Met Gly Phe Pro Gly Pro Lys
            595   600   605

Gly Ala Asn Gly Glu Pro Gly Lys Ala Gly Glu Lys Gly Leu Pro Gly
            610   615   620

Ala Pro Gly Leu Arg Gly Leu Pro Gly Lys Asp Gly Glu Thr Gly Ala
625   630   635   640

Ala Gly Pro Pro Gly Pro Ala Gly Pro Ala Gly Glu Arg Gly Glu Gln
                645   650   655

Gly Ala Pro Gly Pro Ser Gly Phe Gln Gly Leu Pro Gly Pro Pro Gly
                660   665   670

Pro Pro Gly Glu Gly Gly Lys Pro Gly Asp Gln Gly Val Pro Gly Glu
                675   680   685

Ala Gly Ala Pro Gly Leu Val Gly Pro Arg Gly Glu Arg Gly Phe Pro
                690   695   700

Gly Glu Arg Gly Ser Pro Gly Ala Gln Gly Leu Gln Gly Pro Arg Gly
705   710   715   720

Leu Pro Gly Thr Pro Gly Thr Asp Gly Pro Lys Gly Ala Ser Gly Pro
                725   730   735

Ala Gly Pro Pro Gly Ala Gln Gly Pro Pro Gly Leu Gln Gly Met Pro
                740   745   750

Gly Glu Arg Gly Ala Ala Gly Ile Ala Gly Pro Lys Gly Asp Arg Gly
                755   760   765

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Asp Val Gly Glu Lys Gly Pro Glu Gly Ala Pro Gly Lys Asp Gly Gly
    770               775               780


Arg Gly Leu Thr Gly Pro Ile Gly Pro Pro Gly Pro Ala Gly Ala Asn
785               790               795               800


Gly Glu Lys Gly Glu Val Gly Pro Pro Gly Pro Ala Gly Ser Ala Gly
              805               810               815


Ala Arg Gly Ala Pro Gly Glu Arg Gly Glu Thr Gly Pro Pro Gly Pro
              820               825               830


Ala Gly Phe Ala Gly Pro Pro Gly Ala Asp Gly Gln Pro Gly Ala Lys
              835               840               845


Gly Glu Gln Gly Glu Ala Gly Gln Lys Gly Asp Ala Gly Ala Pro Gly
    850               855               860


Pro Gln Gly Pro Ser Gly Ala Pro Gly Pro Gln Gly Pro Thr Gly Val
865               870               875               880


Thr Gly Pro Lys Gly Ala Arg Gly Ala Gln Gly Pro Pro Gly Ala Thr
              885               890               895


Gly Phe Pro Gly Ala Ala Gly Arg Val Gly Pro Pro Gly Ser Asn Gly
              900               905               910
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Asn Pro Gly Pro Pro Gly Pro Pro Gly Pro Ser Gly Lys Asp Gly Pro
      915   920   925

Lys Gly Ala Arg Gly Asp Ser Gly Pro Pro Gly Arg Ala Gly Glu Pro
      930   935   940

Gly Leu Gln Gly Pro Ala Gly Pro Pro Gly Glu Lys Gly Glu Pro Gly
945   950   955   960

Asp Asp Gly Pro Ser Gly Ala Glu Gly Pro Pro Gly Pro Gln Gly Leu
      965   970   975

Ala Gly Gln Arg Gly Ile Val Gly Leu Pro Gly Gln Arg Gly Glu Arg
      980   985   990

Gly Phe Pro Gly Leu Pro Gly Pro Ser Gly Glu Pro Gly Lys Gln Gly
      995   1000   1005

Ala Pro Gly Ala Ser Gly Asp Arg Gly Pro Pro Gly Pro Val Gly
      1010   1015   1020

Pro Pro Gly Leu Thr Gly Pro Ala Gly Glu Pro Gly Arg Glu Gly
      1025   1030   1035

Ser Pro Gly Ala Asp Gly Pro Pro Gly Arg Asp Gly Ala Ala Gly
      1040   1045   1050

Val Lys Gly Asp Arg Gly Glu Thr Gly Ala Val Gly Ala Pro Gly
    1055   1060   1065

Ala Pro Gly Pro Pro Gly Ser Pro Gly Pro Ala Gly Pro Thr Gly
    1070   1075   1080

Lys Gln Gly Asp Arg Gly Glu Ala Gly Ala Gln Gly Pro Met Gly
    1085   1090   1095

Pro Ser Gly Pro Ala Gly Ala Arg Gly Ile Gln Gly Pro Gln Gly
    1100   1105   1110

Pro Arg Gly Asp Lys Gly Glu Ala Gly Glu Pro Gly Glu Arg Gly
    1115   1120   1125

Leu Lys Gly His Arg Gly Phe Thr Gly Leu Gln Gly Leu Pro Gly
    1130   1135   1140

Pro Pro Gly Pro Ser Gly Asp Gln Gly Ala Ser Gly Pro Ala Gly
    1145   1150   1155

Pro Ser Gly Pro Arg Gly Pro Pro Gly Pro Val Gly Pro Ser Gly
    1160   1165   1170

Lys Asp Gly Ala Asn Gly Ile Pro Gly Pro Ile Gly Pro Pro Gly
    1175   1180   1185

Pro Arg Gly Arg Ser Gly Glu Thr Gly Pro Ala Gly Pro Pro Gly
    1190   1195   1200

Asn Pro Gly Pro Pro Gly Pro Pro Gly Pro Pro Gly Pro Gly Ile
    1205   1210   1215

Asp Met Ser Ala Phe Ala Gly Leu Gly Pro Arg Glu Lys Gly Pro
    1220   1225   1230

Asp Pro Leu Gln Tyr Met Arg Ala Asp Gln Ala Ala Gly Gly Leu
    1235   1240   1245

Arg Gln His Asp Ala Glu Val Asp Ala Thr Leu Lys Ser Leu Asn
    1250   1255   1260

Asn Gln Ile Glu Ser Ile Arg Ser Pro Glu Gly Ser Arg Lys Asn
    1265   1270   1275

Pro Ala Arg Thr Cys Arg Asp Leu Lys Leu Cys His Pro Glu Trp
    1280   1285   1290

Lys Ser Gly Asp Tyr Trp Ile Asp Pro Asn Gln Gly Cys Thr Leu
    1295   1300   1305

Asp Ala Met Lys Val Phe Cys Asn Met Glu Thr Gly Glu Thr Cys
    1310   1315   1320

Val Tyr Pro Asn Pro Ala Asn Val Pro Lys Lys Asn Trp Trp Ser
   1325   1330   1335

Ser Lys Ser Lys Glu Lys Lys His Ile Trp Phe Gly Glu Thr Ile
   1340   1345   1350

Asn Gly Gly Phe His Phe Ser Tyr Gly Asp Asp Asn Leu Ala Pro
   1355   1360   1365

Asn Thr Ala Asn Val Gln Met Thr Phe Leu Arg Leu Leu Ser Thr
   1370   1375   1380

Glu Gly Ser Gln Asn Ile Thr Tyr His Cys Lys Asn Ser Ile Ala
   1385   1390   1395

Tyr Leu Asp Glu Ala Ala Gly Asn Leu Lys Lys Ala Leu Leu Ile
   1400   1405   1410

Gln Gly Ser Asn Asp Val Glu Ile Arg Ala Glu Gly Asn Ser Arg
   1415   1420   1425

Phe Thr Tyr Thr Ala Leu Lys Asp Gly Cys Thr Lys His Thr Gly
   1430   1435   1440

Lys Trp Gly Lys Thr Val Ile Glu Tyr Arg Ser Gln Lys Thr Ser
   1445   1450   1455

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        Arg Leu  Pro Ile Ile Asp Ile  Ala Pro Met Asp Ile  Gly Gly Pro
             1460                1465                1470


        Glu Gln  Glu Phe Gly Val Asp  Ile Gly Pro Val Cys  Phe Leu
             1475                1480                1485



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    atg acc act tta ctc tgg gtt ttc gtg act ctg agg gtc atc act gca    108
    Met Thr Thr Leu Leu Trp Val Phe Val Thr Leu Arg Val Ile Thr Ala
    1               5                   10                  15


    gct gtc act gta gaa act tca gac cat gac aac tcg ctg agt gtc agc    156
    Ala Val Thr Val Glu Thr Ser Asp His Asp Asn Ser Leu Ser Val Ser
                20                  25                  30


    atc ccc caa ccg tcc ccg ctg agg gtc ctc ctg ggg acc tcc ctc acc    204
    Ile Pro Gln Pro Ser Pro Leu Arg Val Leu Leu Gly Thr Ser Leu Thr
            35                  40                  45


    atc ccc tgc tat ttc atc gac ccc atg cac cct gtg acc acc gcc cct    252
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```
                    Ile Pro Cys Tyr Phe Ile Asp Pro Met His Pro Val Thr Thr Ala Pro
                        50                  55                  60


tct acc gcc cca ctg gcc cca aga atc aag tgg agc cgt gtg tcc aag        300
Ser Thr Ala Pro Leu Ala Pro Arg Ile Lys Trp Ser Arg Val Ser Lys
65                  70                  75                  80


gag aag gag gta gtg ctg ctg gtg gcc act gaa ggg cgc gtg cgg gtc        348
Glu Lys Glu Val Val Leu Leu Val Ala Thr Glu Gly Arg Val Arg Val
                        85                  90                  95


aac agt gcc tat cag gac aag gtc tca ctg ccc aac tac ccg gcc atc        396
Asn Ser Ala Tyr Gln Asp Lys Val Ser Leu Pro Asn Tyr Pro Ala Ile
                    100                 105                 110


ccc agt gac gcc acc ttg gaa gtc cag agc ctg cgc tcc aat gac tct        444
Pro Ser Asp Ala Thr Leu Glu Val Gln Ser Leu Arg Ser Asn Asp Ser
                    115                 120                 125


ggg gtc tac cgc tgc gag gtg atg cat ggc atc gag gac agc gag gcc        492
Gly Val Tyr Arg Cys Glu Val Met His Gly Ile Glu Asp Ser Glu Ala
                    130                 135                 140


acc ctg gaa gtc gtg gtg aaa ggc atc gtg ttc cat tac aga gcc atc        540
Thr Leu Glu Val Val Val Lys Gly Ile Val Phe His Tyr Arg Ala Ile
145                 150                 155                 160


tct aca cgc tac acc ctc gac ttt gac agg gcg cag cgg gcc tgc ctg        588
Ser Thr Arg Tyr Thr Leu Asp Phe Asp Arg Ala Gln Arg Ala Cys Leu
                    165                 170                 175


cag aac agt gcc atc att gcc acg cct gag cag ctg cag gcc gcc tac        636
Gln Asn Ser Ala Ile Ile Ala Thr Pro Glu Gln Leu Gln Ala Ala Tyr
                    180                 185                 190


gaa gac ggc ttc cac cag tgt gac gcc ggc tgg ctg gct gac cag act        684
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        Glu Asp Gly Phe His Gln Cys Asp Ala Gly Trp Leu Ala Asp Gln Thr
             195                 200                 205

        gtc aga tac ccc atc cac act ccc cgg gaa ggc tgc tat gga gac aag       732
        Val Arg Tyr Pro Ile His Thr Pro Arg Glu Gly Cys Tyr Gly Asp Lys
             210                 215                 220

        gat gag ttt cct ggt gtg agg acg tat ggc atc cga gac acc aac gag       780
        Asp Glu Phe Pro Gly Val Arg Thr Tyr Gly Ile Arg Asp Thr Asn Glu
        225                 230                 235                 240

        acc tat gat gtg tac tgc ttc gcc gag gag atg gag ggt gag gtc ttt       828
        Thr Tyr Asp Val Tyr Cys Phe Ala Glu Glu Met Glu Gly Glu Val Phe
                         245                 250                 255

        tat gca aca tct cca gag aag ttc acc ttc cag gaa gca gcc aat gag       876
        Tyr Ala Thr Ser Pro Glu Lys Phe Thr Phe Gln Glu Ala Ala Asn Glu
                         260                 265                 270

        tgc cgg cgg ctg ggt gcc cgg ctg gcc acc acg ggc cac gtc tac ctg       924
        Cys Arg Arg Leu Gly Ala Arg Leu Ala Thr Thr Gly His Val Tyr Leu
                 275                 280                 285

        gcc tgg cag gct ggc atg gac atg tgc agc gcc ggc tgg ctg gcc gac       972
        Ala Trp Gln Ala Gly Met Asp Met Cys Ser Ala Gly Trp Leu Ala Asp
             290                 295                 300

        cgc agc gtg cgc tac ccc atc tcc aag gcc cgg ccc aac tgc ggt ggc       1020
        Arg Ser Val Arg Tyr Pro Ile Ser Lys Ala Arg Pro Asn Cys Gly Gly
        305                 310                 315                 320

        aac ctc ctg ggc gtg agg acc gtc tac gtg cat gcc aac cag acg ggc       1068
        Asn Leu Leu Gly Val Arg Thr Val Tyr Val His Ala Asn Gln Thr Gly
                         325                 330                 335

        tac ccc gac ccc tca tcc cgc tac gac gcc atc tgc tac aca ggt gaa       1116
```

```
                 Tyr Pro Asp Pro Ser Ser Arg Tyr Asp Ala Ile Cys Tyr Thr Gly Glu
                         340                 345                 350


gac ttt gtg gac atc cca gaa aac ttc ttt gga gtg ggg ggt gag gag      1164
Asp Phe Val Asp Ile Pro Glu Asn Phe Phe Gly Val Gly Gly Glu Glu
        355                 360                 365


gac atc acc gtc cag aca gtg acc tgg cct gac atg gag ctg cca ctg      1212
Asp Ile Thr Val Gln Thr Val Thr Trp Pro Asp Met Glu Leu Pro Leu
        370                 375                 380


cct cga aac atc act gag ggt gaa gcc cga ggc agc gtg atc ctt acc      1260
Pro Arg Asn Ile Thr Glu Gly Glu Ala Arg Gly Ser Val Ile Leu Thr
385                 390                 395                 400


gta aag ccc atc ttc gag gtc tcc ccc agt ccc ctg gaa ccc gag gag      1308
Val Lys Pro Ile Phe Glu Val Ser Pro Ser Pro Leu Glu Pro Glu Glu
                405                 410                 415


ccc ttc acg ttt gcc cct gaa ata ggg gcc act gcc ttc gct gag gtt      1356
Pro Phe Thr Phe Ala Pro Glu Ile Gly Ala Thr Ala Phe Ala Glu Val
                420                 425                 430


gag aat gag act gga gag gcc acc agg ccc tgg ggc ttt ccc aca cct      1404
Glu Asn Glu Thr Gly Glu Ala Thr Arg Pro Trp Gly Phe Pro Thr Pro
                435                 440                 445


ggc ctg ggc cct gcc acg gca ttc acc agt gag gac ctc gtc gtg cag      1452
Gly Leu Gly Pro Ala Thr Ala Phe Thr Ser Glu Asp Leu Val Val Gln
        450                 455                 460


gtg acc gct gtc cct ggg cag ccg cat ttg cca ggg ggg gtc gtc ttc      1500
Val Thr Ala Val Pro Gly Gln Pro His Leu Pro Gly Gly Val Val Phe
465                 470                 475                 480


cac tac cgc ccg gga ccc acc cgc tac tcg ctg acc ttt gag gag gca      1548
```

```
His Tyr Arg Pro Gly Pro Thr Arg Tyr Ser Leu Thr Phe Glu Glu Ala
            485                 490                 495
```

```
cag cag gcc tgc cct ggc acg ggg gcg gtc att gcc tcg ccg gag cag        1596
Gln Gln Ala Cys Pro Gly Thr Gly Ala Val Ile Ala Ser Pro Glu Gln
            500                 505                 510
```

```
ctc cag gcc gcc tac gaa gca ggc tat gag cag tgt gac gcc ggc tgg        1644
Leu Gln Ala Ala Tyr Glu Ala Gly Tyr Glu Gln Cys Asp Ala Gly Trp
            515                 520                 525
```

```
ctg cgg gac cag acc gtc aga tac ccc att gtg agc cca cgg acc cca        1692
Leu Arg Asp Gln Thr Val Arg Tyr Pro Ile Val Ser Pro Arg Thr Pro
            530                 535                 540
```

```
tgc gtg ggt gac aag gac agc agc cca ggg gtc agg acc tat ggc gtg       1740
Cys Val Gly Asp Lys Asp Ser Ser Pro Gly Val Arg Thr Tyr Gly Val
545                 550                 555                 560
```

```
cgc cca tca aca gag acc tac gat gtc tac tgc ttt gta gac aga ctt        1788
Arg Pro Ser Thr Glu Thr Tyr Asp Val Tyr Cys Phe Val Asp Arg Leu
            565                 570                 575
```

```
gag ggg gag gtg ttc ttc gcc aca cgc ctt gag cag ttc acc ttc cag        1836
Glu Gly Glu Val Phe Phe Ala Thr Arg Leu Glu Gln Phe Thr Phe Gln
            580                 585                 590
```

```
gaa gca ctg gag ttc tgt gaa tct cac aat gcc act gcc acc acg ggc        1884
Glu Ala Leu Glu Phe Cys Glu Ser His Asn Ala Thr Ala Thr Thr Gly
            595                 600                 605
```

```
cag ctc tac gcc gcc tgg agc cgc ggc ctg gac aag tgc tat gcc ggc        1932
Gln Leu Tyr Ala Ala Trp Ser Arg Gly Leu Asp Lys Cys Tyr Ala Gly
            610                 615                 620
```

```
tgg ctg gcc gac ggc agc ctc cgc tac ccc atc gtc acc cca agg cct        1980
```

Trp Leu Ala Asp Gly Ser Leu Arg Tyr Pro Ile Val Thr Pro Arg Pro
625   630   635   640

gcc tgc ggt ggg gac aag cca ggc gtg aga acg gtc tac ctc tac cct   2028
Ala Cys Gly Gly Asp Lys Pro Gly Val Arg Thr Val Tyr Leu Tyr Pro
                    645   650   655

aac cag acg ggc ctc cca gac cca ctg tcc cgg cac cat gcc ttc tgc   2076
Asn Gln Thr Gly Leu Pro Asp Pro Leu Ser Arg His His Ala Phe Cys
                660   665   670

ttc cga ggc att tca gcg gtt cct tct cca gga gaa gaa gag ggt ggc   2124
Phe Arg Gly Ile Ser Ala Val Pro Ser Pro Gly Glu Glu Glu Gly Gly
            675   680   685

aca ccc aca tca ccc tct ggt gtg gag gag tgg atc gtg acc caa gtg   ,2172
Thr Pro Thr Ser Pro Ser Gly Val Glu Glu Trp Ile Val Thr Gln Val
            690   695   700

gtt cct ggt gtg gct gct gtc ccc gta gaa gag gag aca act gct gta   2220
Val Pro Gly Val Ala Ala Val Pro Val Glu Glu Glu Thr Thr Ala Val
705   710   715   720

ccc tca ggg gag act act gcc atc cta gag ttc acc acc gag cca gaa   2268
Pro Ser Gly Glu Thr Thr Ala Ile Leu Glu Phe Thr Thr Glu Pro Glu
                725   730   735

aac cag aca gaa tgg gaa cca gcc tat acc cca gtg ggc aca tcc ccg   2316
Asn Gln Thr Glu Trp Glu Pro Ala Tyr Thr Pro Val Gly Thr Ser Pro
                740   745   750

ctg cca ggg atc ctt cct act tgg cct cct act ggc gcc gaa aca gag   2364
Leu Pro Gly Ile Leu Pro Thr Trp Pro Pro Thr Gly Ala Glu Thr Glu
            755   760   765

gaa agt aca gaa ggc cct tct gca act gaa gtg ccc tct gcc tca gag   2412

```
Glu Ser Thr Glu Gly Pro Ser Ala Thr Glu Val Pro Ser Ala Ser Glu
    770             775             780


gaa cca tcc ccc tca gag gtg cca ttc ccc tca gag gag cca tcc ccc      2460
Glu Pro Ser Pro Ser Glu Val Pro Phe Pro Ser Glu Glu Pro Ser Pro
785             790             795             800


tca gag gaa cca ttc ccc tca gtg agg cca ttc ccc tca gtg gag ctg      2508
Ser Glu Glu Pro Phe Pro Ser Val Arg Pro Phe Pro Ser Val Glu Leu
                805             810             815


ttc ccc tca gag gag cca ttc ccc tcc aag gag cca tcc ccc tca gag      2556
Phe Pro Ser Glu Glu Pro Phe Pro Ser Lys Glu Pro Ser Pro Ser Glu
                820             825             830


gaa cca tca gcc tca gaa gag ccg tat aca cct tca ccc ccc gag ccc      2604
Glu Pro Ser Ala Ser Glu Glu Pro Tyr Thr Pro Ser Pro Pro Glu Pro
                835             840             845


agc tgg act gag ctg ccc agc tct ggg gag gaa tct ggg gcc cct gat      2652
Ser Trp Thr Glu Leu Pro Ser Ser Gly Glu Glu Ser Gly Ala Pro Asp
    850             855             860


gtc agt ggt gac ttc aca ggc agt gga gat gtt tca gga cac ctt gac      2700
Val Ser Gly Asp Phe Thr Gly Ser Gly Asp Val Ser Gly His Leu Asp
865             870             875             880


ttc agt ggg cag ctg tca ggg gac agg gca agt gga ctg ccc tct gga      2748
Phe Ser Gly Gln Leu Ser Gly Asp Arg Ala Ser Gly Leu Pro Ser Gly
                885             890             895


gac ctg gac tcc agt ggt ctt act tcc aca gtg ggc tca ggc ctg act      2796
Asp Leu Asp Ser Ser Gly Leu Thr Ser Thr Val Gly Ser Gly Leu Thr
                900             905             910


gtg gaa agt gga cta ccc tca ggg gat gaa gag aga att gag tgg ccc      2844
```

```
Val Glu Ser Gly Leu Pro Ser Gly Asp Glu Glu Arg Ile Glu Trp Pro
        915                 920                 925
```

```
agc act cct acg gtt ggt gaa ctg ccc tct gga gct gag atc cta gag      2892
Ser Thr Pro Thr Val Gly Glu Leu Pro Ser Gly Ala Glu Ile Leu Glu
        930                 935                 940
```

```
ggc tct gcc tct gga gtt ggg gat ctc agt gga ctt cct tct gga gaa      2940
Gly Ser Ala Ser Gly Val Gly Asp Leu Ser Gly Leu Pro Ser Gly Glu
945                 950                 955                 960
```

```
gtt cta gag acc tct gcc tct gga gta gga gac ctc agt ggg ctt cct      2988
Val Leu Glu Thr Ser Ala Ser Gly Val Gly Asp Leu Ser Gly Leu Pro
                965                 970                 975
```

```
tct gga gaa gtt cta gag acc act gcc cct gga gta gag gac atc agc      3036
Ser Gly Glu Val Leu Glu Thr Thr Ala Pro Gly Val Glu Asp Ile Ser
                980                 985                 990
```

```
ggg ctt cct tct gga gaa gtt cta  gag acc act gcc cct  gga gta gag   3084
Gly Leu Pro Ser Gly Glu Val Leu  Glu Thr Thr Ala Pro  Gly Val Glu
        995                 1000                1005
```

```
gac atc  agc ggg ctt cct tct  gga gaa gtt cta gag  acc act gcc      3129
Asp Ile  Ser Gly Leu Pro Ser  Gly Glu Val Leu Glu  Thr Thr Ala
        1010                1015                1020
```

```
cct gga  gta gag gac atc agc  ggg ctt cct tct gga  gaa gtt cta      3174
Pro Gly  Val Glu Asp Ile Ser  Gly Leu Pro Ser Gly  Glu Val Leu
        1025                1030                1035
```

```
gag acc  act gcc cct gga gta  gag gac atc agc ggg  ctt cct tct      3219
Glu Thr  Thr Ala Pro Gly Val  Glu Asp Ile Ser Gly  Leu Pro Ser
        1040                1045                1050
```

```
gga gaa  gtt cta gag acc act  gcc cct gga gta gag  gac atc agc      3264
```

```
Gly Glu  Val Leu Glu Thr  Thr  Ala Pro Gly Val  Glu  Asp Ile Ser
    1055                1060                1065


ggg ctt  cct tct gga gaa  gtt  cta gag acc gct  gcc  cct gga gta        3309
Gly Leu  Pro Ser Gly Glu  Val  Leu Glu Thr Ala  Ala  Pro Gly Val
    1070                1075                1080


gag gac  atc agc ggg ctt  cct  tct gga gaa gtt  cta  gag acc gct        3354
Glu Asp  Ile Ser Gly Leu  Pro  Ser Gly Glu Val  Leu  Glu Thr Ala
    1085                1090                1095


gcc cct  gga gta gag gac  atc  agc ggg ctt cct  tct  gga gaa gtt        3399
Ala Pro  Gly Val Glu Asp  Ile  Ser Gly Leu Pro  Ser  Gly Glu Val
    1100                1105                1110


cta gag  acc gct gcc cct  gga  gta gag gac atc  agc  ggg ctt cct        3444
Leu Glu  Thr Ala Ala Pro  Gly  Val Glu Asp Ile  Ser  Gly Leu Pro
    1115                1120                1125


tct gga  gaa gtt cta gag  acc  gct gcc cct gga  gta  gag gac atc        3489
Ser Gly  Glu Val Leu Glu  Thr  Ala Ala Pro Gly  Val  Glu Asp Ile
    1130                1135                1140


agc ggg  ctt cct tct gga gaa  gtt cta gag acc gct  gcc cct gga          3534
Ser Gly  Leu Pro Ser Gly Glu  Val Leu Glu Thr Ala  Ala Pro Gly
    1145                1150                1155


gta gag  gac atc agc ggg ctt  cct tct gga gaa gtt  cta gag acc          3579
Val Glu  Asp Ile Ser Gly Leu  Pro Ser Gly Glu Val  Leu Glu Thr
    1160                1165                1170


gct gcc  cct gga gta gag gac  atc agc ggg ctt cct  tct gga gaa          3624
Ala Ala  Pro Gly Val Glu Asp  Ile Ser Gly Leu Pro  Ser Gly Glu
    1175                1180                1185


gtt cta  gag acc gct gcc cct  gga gta gag gac atc  agc ggg ctt          3669
```

```
Val Leu  Glu Thr Ala Ala Pro  Gly Val Glu Asp Ile  Ser Gly Leu
    1190             1195              1200
```

```
cct tct  gga gaa gtt cta gag  act gct gcc cct gga  gta gag gac          3714
Pro Ser  Gly Glu Val Leu Glu  Thr Ala Ala Pro Gly  Val Glu Asp
    1205             1210              1215
```

```
atc agc  ggg ctt cct tct gga  gaa gtt cta gag act  gct gcc cct          3759
Ile Ser  Gly Leu Pro Ser Gly  Glu Val Leu Glu Thr  Ala Ala Pro
    1220             1225              1230
```

```
gga gta  gag gac atc agc ggg  ctt cct tct gga gaa  gtt cta gag          3804
Gly Val  Glu Asp Ile Ser Gly  Leu Pro Ser Gly Glu  Val Leu Glu
    1235             1240              1245
```

```
act gct  gcc cct gga gta gag  gac atc agc ggg ctt  cct tct gga          3849
Thr Ala  Ala Pro Gly Val Glu  Asp Ile Ser Gly Leu  Pro Ser Gly
    1250             1255              1260
```

```
gaa gtt  cta gag act gct gcc  cct gga gta gag gac  atc agc ggg          3894
Glu Val  Leu Glu Thr Ala Ala  Pro Gly Val Glu Asp  Ile Ser Gly
    1265             1270              1275
```

```
ctt cct  tct gga gaa gtt cta  gag act act gcc cct  gga gta gag          3939
Leu Pro  Ser Gly Glu Val Leu  Glu Thr Thr Ala Pro  Gly Val Glu
    1280             1285              1290
```

```
gag atc  agc ggg ctt cct tct  gga gaa gtt cta gag  act act gcc          3984
Glu Ile  Ser Gly Leu Pro Ser  Gly Glu Val Leu Glu  Thr Thr Ala
    1295             1300              1305
```

```
cct gga  gta gat gag atc agt  ggg ctt cct tct gga  gaa gtt cta          4029
Pro Gly  Val Asp Glu Ile Ser  Gly Leu Pro Ser Gly  Glu Val Leu
    1310             1315              1320
```

```
gag act  act gcc cct gga gta  gag gag atc agc ggg  ctt cct tct          4074
```

```
Glu Thr  Thr Ala Pro Gly Val  Glu Glu Ile Ser Gly  Leu Pro Ser
    1325          1330          1335
```

```
gga gaa  gtt cta gag act tct  acc tct gcg gta ggg  gac ctc agt      4119
Gly Glu  Val Leu Glu Thr Ser  Thr Ser Ala Val Gly  Asp Leu Ser
    1340          1345          1350
```

```
gga ctt  cct tct gga gga gaa  gtt cta gag att tct  gtc tct gga      4164
Gly Leu  Pro Ser Gly Gly Glu  Val Leu Glu Ile Ser  Val Ser Gly
    1355          1360          1365
```

```
gta gag  gac atc agt ggg ctt  cct tct gga gag gtt  gta gag act      4209
Val Glu  Asp Ile Ser Gly Leu  Pro Ser Gly Glu Val  Val Glu Thr
    1370          1375          1380
```

```
tct gcc  tct gga ata gag gat  gtc agt gaa ctt cct  tca gga gaa    '4254
Ser Ala  Ser Gly Ile Glu Asp  Val Ser Glu Leu Pro  Ser Gly Glu
    1385          1390          1395
```

```
ggt cta  gag acc tct gct tct  gga gta gag gac ctc  agc agg ctc      4299
Gly Leu  Glu Thr Ser Ala Ser  Gly Val Glu Asp Leu  Ser Arg Leu
    1400          1405          1410
```

```
cct tct  gga gaa gaa gtt cta  gag att tct gcc tct  gga ttt ggg      4344
Pro Ser  Gly Glu Glu Val Leu  Glu Ile Ser Ala Ser  Gly Phe Gly
    1415          1420          1425
```

```
gac ctc  agt gga gtt cct tct  gga gga gaa ggt cta  gag acc tct      4389
Asp Leu  Ser Gly Val Pro Ser  Gly Gly Glu Gly Leu  Glu Thr Ser
    1430          1435          1440
```

```
gct tct  gaa gta ggg act gac  ctc agt ggg ctt cct  tct gga agg      4434
Ala Ser  Glu Val Gly Thr Asp  Leu Ser Gly Leu Pro  Ser Gly Arg
    1445          1450          1455
```

```
gag ggt  cta gag act tca gct  tct gga gct gag gac  ctc agt ggg      4479
```

Glu Gly Leu Glu Thr Ser Ala Ser Gly Ala Glu Asp Leu Ser Gly
        1460   1465   1470

ttg cct tct gga aaa gaa gac ttg gtg ggg tca gct tct gga gac   4524
Leu Pro Ser Gly Lys Glu Asp Leu Val Gly Ser Ala Ser Gly Asp
        1475   1480   1485

ttg gac ttg ggc aaa ctg cct tct gga act cta gga agt ggg caa   4569
Leu Asp Leu Gly Lys Leu Pro Ser Gly Thr Leu Gly Ser Gly Gln
        1490   1495   1500

gct cca gaa aca agt ggt ctt ccc tct gga ttt agt ggt gag tat   4614
Ala Pro Glu Thr Ser Gly Leu Pro Ser Gly Phe Ser Gly Glu.Tyr
        1505   1510   1515

tct ggg gtg gac ctt gga agt ggc cca ccc tct ggc ctg cct gac   .4659
Ser Gly Val Asp Leu Gly Ser Gly Pro Pro Ser Gly Leu Pro Asp
        1520   1525   1530

ttt agt gga ctt cca tct gga ttc cca act gtt tcc cta gtg gat   4704
Phe Ser Gly Leu Pro Ser Gly Phe Pro Thr Val Ser Leu Val Asp
        1535   1540   1545

tct aca ttg gtg gaa gtg gtc aca gcc tcc act gca agt gaa ctg   4749
Ser Thr Leu Val Glu Val Val Thr Ala Ser Thr Ala Ser Glu Leu
        1550   1555   1560

gaa ggg agg gga acc att ggc atc agt ggt gca gga gaa ata tct   4794
Glu Gly Arg Gly Thr Ile Gly Ile Ser Gly Ala Gly Glu Ile Ser
        1565   1570   1575

gga ctg ccc tcc agt gag ctg gac att agt ggg aga gct agt gga   4839
Gly Leu Pro Ser Ser Glu Leu Asp Ile Ser Gly Arg Ala Ser Gly
        1580   1585   1590

ctc cct tca gga act gaa ctc agt ggc caa gca tct ggg tct cct   4884

Leu Pro Ser Gly Thr Glu Leu Ser Gly Gln Ala Ser Gly Ser Pro
    1595   1600   1605

gat gtc agt ggg gaa ata cct gga ctc ttt ggt gtc agt gga cag   4929
Asp Val Ser Gly Glu Ile Pro Gly Leu Phe Gly Val Ser Gly Gln
    1610   1615   1620

cca tca ggg ttt cct gac act agt ggg gaa aca tct gga gtg act   4974
Pro Ser Gly Phe Pro Asp Thr Ser Gly Glu Thr Ser Gly Val Thr
    1625   1630   1635

gag ctt agc ggg ctg tcc tct gga caa cca ggt gtt agt gga gaa   5019
Glu Leu Ser Gly Leu Ser Ser Gly Gln Pro Gly Val Ser Gly. Glu
    1640   1645   1650

gca tct gga gtt ctt tat ggc act agt caa ccc ttt ggc ata act   ,5064
Ala Ser Gly Val Leu Tyr Gly Thr Ser Gln Pro Phe Gly Ile Thr
    1655   1660   1665

gat ctg agt gga gaa aca tct ggg gtc cct gat ctc agt ggg cag   5109
Asp Leu Ser Gly Glu Thr Ser Gly Val Pro Asp Leu Ser Gly Gln
    1670   1675   1680

cct tca ggg tta cca ggg ttc agt ggg gca aca tca gga gtc cct   5154
Pro Ser Gly Leu Pro Gly Phe Ser Gly Ala Thr Ser Gly Val Pro
    1685   1690   1695

gac ctg gtt tct ggt acc acg agt ggc agc ggt gaa tct tct ggg   5199
Asp Leu Val Ser Gly Thr Thr Ser Gly Ser Gly Glu Ser Ser Gly
    1700   1705   1710

att aca ttt gtg gac acc agt ttg gtt gaa gtg gcc cct act aca   5244
Ile Thr Phe Val Asp Thr Ser Leu Val Glu Val Ala Pro Thr Thr
    1715   1720   1725

ttt aaa gaa gaa gaa ggc tta ggg tct gtg gaa ctc agt ggc ctc   5289 .

```
Phe Lys  Glu Glu Glu Gly Leu  Gly Ser Val Glu Leu  Ser Gly Leu
    1730             1735                1740
```

```
cct tcc  gga gag gca gat ctg  tca ggc aaa tct ggg  atg gtg gat        5334
Pro Ser  Gly Glu Ala Asp Leu  Ser Gly Lys Ser Gly  Met Val Asp
    1745             1750                1755
```

```
gtc agt  gga cag ttt tct gga  aca gtc gat tcc agt  ggg ttt aca        5379
Val Ser  Gly Gln Phe Ser Gly  Thr Val Asp Ser Ser  Gly Phe Thr
    1760             1765                1770
```

```
tcc cag  act ccg gaa ttc agt  ggc cta cca agt ggc  ata gct gag        5424
Ser Gln  Thr Pro Glu Phe Ser  Gly Leu Pro Ser Gly  Ile Ala Glu
    1775             1780                1785
```

```
gtc agt  gga gaa tcc tcc aga  gct gag att ggg agc  agc ctg ccc        5469
Val Ser  Gly Glu Ser Ser Arg  Ala Glu Ile Gly Ser  Ser Leu Pro
    1790             1795                1800
```

```
tcg gga  gca tat tat ggc agt  gga act cca tct agt  ttc ccc acg        5514
Ser Gly  Ala Tyr Tyr Gly Ser  Gly Thr Pro Ser Ser  Phe Pro Thr
    1805             1810                1815
```

```
gtc tct  ctt gta gac aga act  ttg gtg gaa tct gta  acc cag gct        5559
Val Ser  Leu Val Asp Arg Thr  Leu Val Glu Ser Val  Thr Gln Ala
    1820             1825                1830
```

```
cca aca  gcc caa gag gca gga  gaa ggg cct tct ggc  att tta gaa        5604
Pro Thr  Ala Gln Glu Ala Gly  Glu Gly Pro Ser Gly  Ile Leu Glu
    1835             1840                1845
```

```
ctc agt  ggt gct cat tct gga  gca cca gac atg tct  ggg gag cat        5649
Leu Ser  Gly Ala His Ser Gly  Ala Pro Asp Met Ser  Gly Glu His
    1850             1855                1860
```

```
tct gga  ttt ctg gac cta agt  ggg ctg cag tcc ggg  ctg ata gag        5694
```

```
          Ser Gly  Phe Leu Asp Leu Ser  Gly Leu Gln Ser Gly  Leu Ile Glu
              1865              1870             1875


          ccc agc  gga gag cca cca ggt  act cca tat ttt agt  ggg gat ttt        5739
          Pro Ser  Gly Glu Pro Pro Gly  Thr Pro Tyr Phe Ser  Gly Asp Phe
              1880              1885             1890


          gcc agc  acc acc aat gta agt  gga gaa tcc tct gta  gcc atg ggc        5784
          Ala Ser  Thr Thr Asn Val Ser  Gly Glu Ser Ser Val  Ala Met Gly
              1895              1900             1905


          acc agt  gga gag gcc tca gga  ctt cca gaa gtt act  tta atc act        5829
          Thr Ser  Gly Glu Ala Ser Gly  Leu Pro Glu Val Thr  Leu Ile Thr
              1910              1915             1920


          tct gag  ttc gtg gag ggt gtt  act gaa cca act att  tct cag gaa        5874
          Ser Glu  Phe Val Glu Gly Val  Thr Glu Pro Thr Ile  Ser Gln Glu
              1925              1930             1935


          cta ggc  caa agg ccc cct gtg  aca cac aca ccc cag  ctt ttt gag        5919
          Leu Gly  Gln Arg Pro Pro Val  Thr His Thr Pro Gln  Leu Phe Glu
              1940              1945             1950


          tcc agt  gga aaa gtc tcc aca  gct ggg gac att agt  gga gct acc        5964
          Ser Ser  Gly Lys Val Ser Thr  Ala Gly Asp Ile Ser  Gly Ala Thr
              1955              1960             1965


          cca gtg  ctc cct ggg tct gga  gta gaa gta tca tca  gtc cca gaa        6009
          Pro Val  Leu Pro Gly Ser Gly  Val Glu Val Ser Ser  Val Pro Glu
              1970              1975             1980


          tct agc  agt gag acg tcc gcc  tat cct gaa gct ggg  ttc ggg gca        6054
          Ser Ser  Ser Glu Thr Ser Ala  Tyr Pro Glu Ala Gly  Phe Gly Ala
              1985              1990             1995


          tct gcc  gcc cct gag gcc agc  aga gaa gat tct ggg  tcc cct gat        6099
```

```
Ser Ala   Ala Pro Glu Ala Ser   Arg Glu Asp Ser Gly   Ser Pro Asp
    2000                 2005                 2010


ctg agt   gaa acc acc tct gca   ttc cac gaa gct aac   ctt gag aga          6144
Leu Ser   Glu Thr Thr Ser Ala   Phe His Glu Ala Asn   Leu Glu Arg
    2015                 2020                 2025


tcc tct   ggc cta gga gtg agc   ggc agc act ttg aca   ttt caa gaa          6189
Ser Ser   Gly Leu Gly Val Ser   Gly Ser Thr Leu Thr   Phe Gln Glu
    2030                 2035                 2040


ggc gag   gcg tcc gct gcc cca   gaa gtg agt gga gaa   tcc acc acc          6234
Gly Glu   Ala Ser Ala Ala Pro   Glu Val Ser Gly Glu   Ser Thr Thr
    2045                 2050                 2055


acc agt   gat gtg ggg aca gag   gca cca ggc ttg cct   tca gcc act        6279
Thr Ser   Asp Val Gly Thr Glu   Ala Pro Gly Leu Pro   Ser Ala Thr
    2060                 2065                 2070


ccc acg   gct tct gga gac agg   act gaa atc agc gga   gac ctg tct          6324
Pro Thr   Ala Ser Gly Asp Arg   Thr Glu Ile Ser Gly   Asp Leu Ser
    2075                 2080                 2085


ggt cac   acc tcg cag ctg ggc   gtt gtc atc agc acc   agc atc cca          6369
Gly His   Thr Ser Gln Leu Gly   Val Val Ile Ser Thr   Ser Ile Pro
    2090                 2095                 2100


gag tct   gag tgg acc cag cag   acc cag cgc cct gca   gag acg cat          6414
Glu Ser   Glu Trp Thr Gln Gln   Thr Gln Arg Pro Ala   Glu Thr His
    2105                 2110                 2115


cta gaa   att gag tcc tca agc   ctc ctg tac tca gga   gaa gag act          6459
Leu Glu   Ile Glu Ser Ser Ser   Leu Leu Tyr Ser Gly   Glu Glu Thr
    2120                 2125                 2130


cac aca   gtc gaa aca gcc acc   tcc cca aca gat gct   tcc atc cca          6504
```

```
His Thr  Val Glu Thr Ala Thr  Ser Pro Thr Asp Ala  Ser Ile Pro
    2135              2140              2145


gct tct  ccg gaa tgg aaa cgt  gaa tca gaa tca act  gct gca gac          6549
Ala Ser  Pro Glu Trp Lys Arg  Glu Ser Glu Ser Thr  Ala Ala Asp
    2150              2155              2160


cag gag  gta tgt gag gag ggc  tgg aac aag tac cag  ggc cac tgt          6594
Gln Glu  Val Cys Glu Glu Gly  Trp Asn Lys Tyr Gln  Gly His Cys
    2165              2170              2175


tac cgc  cac ttc ccg gac cgc  gag acc tgg gtg gat  gct gag cgc          6639
Tyr Arg  His Phe Pro Asp Arg  Glu Thr Trp Val Asp  Ala Glu Arg
    2180              2185              2190


cgg tgt  cgg gag cag cag tca  cac ctg agc agc atc  gtc acc ccc          6684
Arg Cys  Arg Glu Gln Gln Ser  His Leu Ser Ser Ile  Val Thr Pro
    2195              2200              2205


gag gag  cag gag ttt gtc aac  aac aat gcc caa gac  tac cag tgg          6729
Glu Glu  Gln Glu Phe Val Asn  Asn Asn Ala Gln Asp  Tyr Gln Trp
    2210              2215              2220


atc ggc  ctg aac gac agg acc  atc gaa ggg gac ttc  cgc tgg tca          6774
Ile Gly  Leu Asn Asp Arg Thr  Ile Glu Gly Asp Phe  Arg Trp Ser
    2225              2230              2235


gat gga  cac ccc atg caa ttt  gag aac tgg cgc ccc  aac cag cct          6819
Asp Gly  His Pro Met Gln Phe  Glu Asn Trp Arg Pro  Asn Gln Pro
    2240              2245              2250


gac aac  ttt ttt gcc gct gga  gag gac tgt gtg gtg  atg atc tgg          6864
Asp Asn  Phe Phe Ala Ala Gly  Glu Asp Cys Val Val  Met Ile Trp
    2255              2260              2265


cac gag  aag ggc gag tgg aat  gat gtt ccc tgc aat  tac cac ctc          6909
```

```
His Glu  Lys Gly Glu Trp Asn  Asp Val Pro Cys Asn  Tyr His Leu
    2270              2275              2280


ccc ttc  acg tgt aaa aag ggc  aca gcc acc acc tac  aaa cgc aga       6954
Pro Phe  Thr Cys Lys Lys Gly  Thr Ala Thr Thr Tyr  Lys Arg Arg
    2285              2290              2295


cta cag  aag cgg agc tca cgg  cac cct cgg agg agc  cgc ccc agc       6999
Leu Gln  Lys Arg Ser Ser Arg  His Pro Arg Arg Ser  Arg Pro Ser
    2300              2305              2310


aca gcc  cac tga gaagagcttc caggacgcac ccaggacgct gagcccagga        7051
Thr Ala  His
    2315


gcctgccagg ctgacgtgca tcccacccag acggtgtcct cttcttgtcg cttttttgtca  7111


tataaggaat cccattaaaa aaaaaa                                         7137
```

<210> 20
<211> 2316
<212> PRT
<213> Homo sapiens

<400> 20

```
Met Thr Thr Leu Leu Trp Val Phe Val Thr Leu Arg Val Ile Thr Ala
1               5               10              15


Ala Val Thr Val Glu Thr Ser Asp His Asp Asn Ser Leu Ser Val Ser
            20              25              30


Ile Pro Gln Pro Ser Pro Leu Arg Val Leu Leu Gly Thr Ser Leu Thr
```

                    35   40   45

    Ile Pro Cys Tyr Phe Ile Asp Pro Met His Pro Val Thr Thr Ala Pro
          50   55   60

    Ser Thr Ala Pro Leu Ala Pro Arg Ile Lys Trp Ser Arg Val Ser Lys
    65   70   75   80

    Glu Lys Glu Val Val Leu Leu Val Ala Thr Glu Gly Arg Val Arg Val
                          85   90   95

    Asn Ser Ala Tyr Gln Asp Lys Val Ser Leu Pro Asn Tyr Pro Ala Ile
                    100   105   110

    Pro Ser Asp Ala Thr Leu Glu Val Gln Ser Leu Arg Ser Asn Asp Ser
                    115   120   125

    Gly Val Tyr Arg Cys Glu Val Met His Gly Ile Glu Asp Ser Glu Ala
          130   135   140

    Thr Leu Glu Val Val Val Lys Gly Ile Val Phe His Tyr Arg Ala Ile
    145   150   155   160

    Ser Thr Arg Tyr Thr Leu Asp Phe Asp Arg Ala Gln Arg Ala Cys Leu
                    165   170   175

    Gln Asn Ser Ala Ile Ile Ala Thr Pro Glu Gln Leu Gln Ala Ala Tyr

```
                    180                 185                 190



    Glu Asp Gly Phe His Gln Cys Asp Ala Gly Trp Leu Ala Asp Gln Thr
            195                 200                 205



    Val Arg Tyr Pro Ile His Thr Pro Arg Glu Gly Cys Tyr Gly Asp Lys
            210                 215                 220



    Asp Glu Phe Pro Gly Val Arg Thr Tyr Gly Ile Arg Asp Thr Asn Glu
    225                 230                 235                 240



    Thr Tyr Asp Val Tyr Cys Phe Ala Glu Glu Met Glu Gly Glu Val Phe
                    245                 250                 255



    Tyr Ala Thr Ser Pro Glu Lys Phe Thr Phe Gln Glu Ala Ala Asn Glu
                    260                 265                 270



    Cys Arg Arg Leu Gly Ala Arg Leu Ala Thr Thr Gly His Val Tyr Leu
                    275                 280                 285



    Ala Trp Gln Ala Gly Met Asp Met Cys Ser Ala Gly Trp Leu Ala Asp
            290                 295                 300



    Arg Ser Val Arg Tyr Pro Ile Ser Lys Ala Arg Pro Asn Cys Gly Gly
    305                 310                 315                 320



    Asn Leu Leu Gly Val Arg Thr Val Tyr Val His Ala Asn Gln Thr Gly
```

                    325   330   335

Tyr Pro Asp Pro Ser Ser Arg Tyr Asp Ala Ile Cys Tyr Thr Gly Glu
        340   345   350

Asp Phe Val Asp Ile Pro Glu Asn Phe Phe Gly Val Gly Gly Glu Glu
        355   360   365

Asp Ile Thr Val Gln Thr Val Thr Trp Pro Asp Met Glu Leu Pro Leu
        370   375   380

Pro Arg Asn Ile Thr Glu Gly Glu Ala Arg Gly Ser Val Ile Leu Thr
385   390   395   400

Val Lys Pro Ile Phe Glu Val Ser Pro Ser Pro Leu Glu Pro Glu Glu
                405   410   415

Pro Phe Thr Phe Ala Pro Glu Ile Gly Ala Thr Ala Phe Ala Glu Val
            420   425   430

Glu Asn Glu Thr Gly Glu Ala Thr Arg Pro Trp Gly Phe Pro Thr Pro
        435   440   445

Gly Leu Gly Pro Ala Thr Ala Phe Thr Ser Glu Asp Leu Val Val Gln
        450   455   460

Val Thr Ala Val Pro Gly Gln Pro His Leu Pro Gly Gly Val Val Phe

465   470   475   480

His Tyr Arg Pro Gly Pro Thr Arg Tyr Ser Leu Thr Phe Glu Glu Ala
                485   490   495

Gln Gln Ala Cys Pro Gly Thr Gly Ala Val Ile Ala Ser Pro Glu Gln
                500   505   510

Leu Gln Ala Ala Tyr Glu Ala Gly Tyr Glu Gln Cys Asp Ala Gly Trp
                515   520   525

Leu Arg Asp Gln Thr Val Arg Tyr Pro Ile Val Ser Pro Arg Thr Pro
                530   535   540

Cys Val Gly Asp Lys Asp Ser Ser Pro Gly Val Arg Thr Tyr Gly Val
545   550   555   560

Arg Pro Ser Thr Glu Thr Tyr Asp Val Tyr Cys Phe Val Asp Arg Leu
                565   570   575

Glu Gly Glu Val Phe Phe Ala Thr Arg Leu Glu Gln Phe Thr Phe Gln
                580   585   590

Glu Ala Leu Glu Phe Cys Glu Ser His Asn Ala Thr Ala Thr Thr Gly
                595   600   605

Gln Leu Tyr Ala Ala Trp Ser Arg Gly Leu Asp Lys Cys Tyr Ala Gly

```
                    610              615              620


Trp Leu Ala Asp Gly Ser Leu Arg Tyr Pro Ile Val Thr Pro Arg Pro
625               630              635              640


Ala Cys Gly Gly Asp Lys Pro Gly Val Arg Thr Val Tyr Leu Tyr Pro
                  645              650              655


Asn Gln Thr Gly Leu Pro Asp Pro Leu Ser Arg His His Ala Phe Cys
                  660              665              670


Phe Arg Gly Ile Ser Ala Val Pro Ser Pro Gly Glu Glu Glu Gly Gly
         675              680              685


Thr Pro Thr Ser Pro Ser Gly Val Glu Glu Trp Ile Val Thr Gln Val
         690              695              700


Val Pro Gly Val Ala Ala Val Pro Val Glu Glu Glu Thr Thr Ala Val
705               710              715              720


Pro Ser Gly Glu Thr Thr Ala Ile Leu Glu Phe Thr Thr Glu Pro Glu
                  725              730              735


Asn Gln Thr Glu Trp Glu Pro Ala Tyr Thr Pro Val Gly Thr Ser Pro
                  740              745              750


Leu Pro Gly Ile Leu Pro Thr Trp Pro Pro Thr Gly Ala Glu Thr Glu
```

                    755   760   765

Glu Ser Thr Glu Gly Pro Ser Ala Thr Glu Val Pro Ser Ala Ser Glu
      770   775   780

Glu Pro Ser Pro Ser Glu Val Pro Phe Pro Ser Glu Glu Pro Ser Pro
785   790   795   800

Ser Glu Glu Pro Phe Pro Ser Val Arg Pro Phe Pro Ser Val Glu Leu
                 805   810   815

Phe Pro Ser Glu Glu Pro Phe Pro Ser Lys Glu Pro Ser Pro Ser Glu
            820   825   830

Glu Pro Ser Ala Ser Glu Glu Pro Tyr Thr Pro Ser Pro Pro Glu Pro
            835   840   845

Ser Trp Thr Glu Leu Pro Ser Ser Gly Glu Glu Ser Gly Ala Pro Asp
      850   855   860

Val Ser Gly Asp Phe Thr Gly Ser Gly Asp Val Ser Gly His Leu Asp
865   870   875   880

Phe Ser Gly Gln Leu Ser Gly Asp Arg Ala Ser Gly Leu Pro Ser Gly
                 885   890   895

Asp Leu Asp Ser Ser Gly Leu Thr Ser Thr Val Gly Ser Gly Leu Thr

                    900   905   910

        Val Glu Ser Gly Leu Pro Ser Gly Asp Glu Glu Arg Ile Glu Trp Pro
                915   920   925

        Ser Thr Pro Thr Val Gly Glu Leu Pro Ser Gly Ala Glu Ile Leu Glu
                930   935   940

        Gly Ser Ala Ser Gly Val Gly Asp Leu Ser Gly Leu Pro Ser Gly Glu
        945   950   955   960

        Val Leu Glu Thr Ser Ala Ser Gly Val Gly Asp Leu Ser Gly Leu Pro
                        965   970   975

        Ser Gly Glu Val Leu Glu Thr Thr Ala Pro Gly Val Glu Asp Ile Ser
                        980   985   990

        Gly Leu Pro Ser Gly Glu Val Leu Glu Thr Thr Ala Pro Gly Val Glu
                995   1000   1005

        Asp Ile Ser Gly Leu Pro Ser Gly Glu Val Leu Glu Thr Thr Ala
                1010   1015   1020

        Pro Gly Val Glu Asp Ile Ser Gly Leu Pro Ser Gly Glu Val Leu
                1025   1030   1035

        Glu Thr Thr Ala Pro Gly Val Glu Asp Ile Ser Gly Leu Pro Ser

                1040   1045   1050

Gly Glu Val Leu Glu Thr Thr Ala Pro Gly Val Glu Asp Ile Ser
        1055   1060   1065

Gly Leu Pro Ser Gly Glu Val Leu Glu Thr Ala Ala Pro Gly Val
        1070   1075   1080

Glu Asp Ile Ser Gly Leu Pro Ser Gly Glu Val Leu Glu Thr Ala
        1085   1090   1095

Ala Pro Gly Val Glu Asp Ile Ser Gly Leu Pro Ser Gly Glu Val
        1100   1105   1110

Leu Glu Thr Ala Ala Pro Gly Val Glu Asp Ile Ser Gly Leu Pro
        1115   1120   1125

Ser Gly Glu Val Leu Glu Thr Ala Ala Pro Gly Val Glu Asp Ile
        1130   1135   1140

Ser Gly Leu Pro Ser Gly Glu Val Leu Glu Thr Ala Ala Pro Gly
        1145   1150   1155

Val Glu Asp Ile Ser Gly Leu Pro Ser Gly Glu Val Leu Glu Thr
        1160   1165   1170

Ala Ala Pro Gly Val Glu Asp Ile Ser Gly Leu Pro Ser Gly Glu

```
            1175                    1180                    1185


Val Leu  Glu Thr Ala Ala Pro  Gly Val Glu Asp  Ile  Ser Gly Leu
    1190                    1195                    1200


Pro Ser  Gly Glu Val Leu Glu  Thr Ala Ala Pro  Gly  Val Glu Asp
    1205                    1210                    1215


Ile Ser  Gly Leu Pro Ser Gly  Glu Val Leu Glu  Thr  Ala Ala Pro
    1220                    1225                    1230


Gly Val  Glu Asp Ile Ser Gly  Leu Pro Ser Gly  Glu  Val Leu Glu
    1235                    1240                    1245


Thr Ala  Ala Pro Gly Val Glu  Asp Ile Ser Gly  Leu  Pro Ser Gly
    1250                    1255                    1260


Glu Val  Leu Glu Thr Ala Ala  Pro Gly Val Glu  Asp  Ile Ser Gly
    1265                    1270                    1275


Leu Pro  Ser Gly Glu Val Leu  Glu Thr Thr Ala  Pro  Gly Val Glu
    1280                    1285                    1290


Glu Ile  Ser Gly Leu Pro Ser  Gly Glu Val Leu  Glu  Thr Thr Ala
    1295                    1300                    1305


Pro Gly  Val Asp Glu Ile Ser  Gly Leu Pro Ser Gly  Glu Val Leu
```

          1310   1315   1320

Glu Thr Thr Ala Pro Gly Val Glu Glu Ile Ser Gly Leu Pro Ser
    1325   1330   1335

Gly Glu Val Leu Glu Thr Ser Thr Ser Ala Val Gly Asp Leu Ser
    1340   1345   1350

Gly Leu Pro Ser Gly Gly Glu Val Leu Glu Ile Ser Val Ser Gly
    1355   1360   1365

Val Glu Asp Ile Ser Gly Leu Pro Ser Gly Glu Val Val Glu Thr
    1370   1375   1380

Ser Ala Ser Gly Ile Glu Asp Val Ser Glu Leu Pro Ser Gly Glu
    1385   1390   1395

Gly Leu Glu Thr Ser Ala Ser Gly Val Glu Asp Leu Ser Arg Leu
    1400   1405   1410

Pro Ser Gly Glu Glu Val Leu Glu Ile Ser Ala Ser Gly Phe Gly
    1415   1420   1425

Asp Leu Ser Gly Val Pro Ser Gly Gly Glu Gly Leu Glu Thr Ser
    1430   1435   1440

Ala Ser Glu Val Gly Thr Asp Leu Ser Gly Leu Pro Ser Gly Arg

1445   1450   1455

Glu Gly Leu Glu Thr Ser Ala Ser Gly Ala Glu Asp Leu Ser Gly
    1460   1465   1470

Leu Pro Ser Gly Lys Glu Asp Leu Val Gly Ser Ala Ser Gly Asp
    1475   1480   1485

Leu Asp Leu Gly Lys Leu Pro Ser Gly Thr Leu Gly Ser Gly Gln
    1490   1495   1500

Ala Pro Glu Thr Ser Gly Leu Pro Ser Gly Phe Ser Gly Glu Tyr
    1505   1510   1515

Ser Gly Val Asp Leu Gly Ser Gly Pro Pro Ser Gly Leu Pro Asp
    1520   1525   1530

Phe Ser Gly Leu Pro Ser Gly Phe Pro Thr Val Ser Leu Val Asp
    1535   1540   1545

Ser Thr Leu Val Glu Val Val Thr Ala Ser Thr Ala Ser Glu Leu
    1550   1555   1560

Glu Gly Arg Gly Thr Ile Gly Ile Ser Gly Ala Gly Glu Ile Ser
    1565   1570   1575

Gly Leu Pro Ser Ser Glu Leu Asp Ile Ser Gly Arg Ala Ser Gly

        1580   1585   1590

Leu Pro Ser Gly Thr Glu Leu Ser Gly Gln Ala Ser Gly Ser Pro
    1595   1600   1605

Asp Val Ser Gly Glu Ile Pro Gly Leu Phe Gly Val Ser Gly Gln
    1610   1615   1620

Pro Ser Gly Phe Pro Asp Thr Ser Gly Glu Thr Ser Gly Val Thr
    1625   1630   1635

Glu Leu Ser Gly Leu Ser Ser Gly Gln Pro Gly Val Ser Gly Glu
    1640   1645   1650

Ala Ser Gly Val Leu Tyr Gly Thr Ser Gln Pro Phe Gly Ile Thr
    1655   1660   1665

Asp Leu Ser Gly Glu Thr Ser Gly Val Pro Asp Leu Ser Gly Gln
    1670   1675   1680

Pro Ser Gly Leu Pro Gly Phe Ser Gly Ala Thr Ser Gly Val Pro
    1685   1690   1695

Asp Leu Val Ser Gly Thr Thr Ser Gly Ser Gly Glu Ser Ser Gly
    1700   1705   1710

Ile Thr Phe Val Asp Thr Ser Leu Val Glu Val Ala Pro Thr Thr

```
              1715                    1720                    1725


Phe Lys  Glu Glu Glu Gly Leu  Gly Ser Val Glu Leu  Ser Gly Leu
     1730                    1735                    1740


Pro Ser  Gly Glu Ala Asp Leu  Ser Gly Lys Ser Gly  Met Val Asp
     1745                    1750                    1755


Val Ser  Gly Gln Phe Ser Gly  Thr Val Asp Ser Ser  Gly Phe Thr
     1760                    1765                    1770


Ser Gln  Thr Pro Glu Phe Ser  Gly Leu Pro Ser Gly  Ile Ala Glu
     1775                    1780                    1785


Val Ser  Gly Glu Ser Ser Arg  Ala Glu Ile Gly Ser  Ser Leu Pro
     1790                    1795                    1800


Ser Gly  Ala Tyr Tyr Gly Ser  Gly Thr Pro Ser Ser  Phe Pro Thr
     1805                    1810                    1815


Val Ser  Leu Val Asp Arg Thr  Leu Val Glu Ser Val  Thr Gln Ala
     1820                    1825                    1830


Pro Thr  Ala Gln Glu Ala Gly  Glu Gly Pro Ser Gly  Ile Leu Glu
     1835                    1840                    1845


Leu Ser  Gly Ala His Ser Gly  Ala Pro Asp Met Ser  Gly Glu His
```

          1850   1855   1860

Ser Gly Phe Leu Asp Leu Ser Gly Leu Gln Ser Gly Leu Ile Glu
     1865   1870   1875

Pro Ser Gly Glu Pro Pro Gly Thr Pro Tyr Phe Ser Gly Asp Phe
     1880   1885   1890

Ala Ser Thr Thr Asn Val Ser Gly Glu Ser Ser Val Ala Met Gly
     1895   1900   1905

Thr Ser Gly Glu Ala Ser Gly Leu Pro Glu Val Thr Leu Ile Thr
     1910   1915   1920

Ser Glu Phe Val Glu Gly Val Thr Glu Pro Thr Ile Ser Gln Glu
     1925   1930   1935

Leu Gly Gln Arg Pro Pro Val Thr His Thr Pro Gln Leu Phe Glu
     1940   1945   1950

Ser Ser Gly Lys Val Ser Thr Ala Gly Asp Ile Ser Gly Ala Thr
     1955   1960   1965

Pro Val Leu Pro Gly Ser Gly Val Glu Val Ser Ser Val Pro Glu
     1970   1975   1980

Ser Ser Ser Glu Thr Ser Ala Tyr Pro Glu Ala Gly Phe Gly Ala

            1985   1990   1995

Ser Ala Ala Pro Glu Ala Ser Arg Glu Asp Ser Gly Ser Pro Asp
    2000   2005   2010

Leu Ser Glu Thr Thr Ser Ala Phe His Glu Ala Asn Leu Glu Arg
    2015   2020   2025

Ser Ser Gly Leu Gly Val Ser Gly Ser Thr Leu Thr Phe Gln Glu
    2030   2035   2040

Gly Glu Ala Ser Ala Ala Pro Glu Val Ser Gly Glu Ser Thr Thr
    2045   2050   2055

Thr Ser Asp Val Gly Thr Glu Ala Pro Gly Leu Pro Ser Ala Thr
    2060   2065   2070

Pro Thr Ala Ser Gly Asp Arg Thr Glu Ile Ser Gly Asp Leu Ser
    2075   2080   2085

Gly His Thr Ser Gln Leu Gly Val Val Ile Ser Thr Ser Ile Pro
    2090   2095   2100

Glu Ser Glu Trp Thr Gln Gln Thr Gln Arg Pro Ala Glu Thr His
    2105   2110   2115

Leu Glu Ile Glu Ser Ser Ser Leu Leu Tyr Ser Gly Glu Glu Thr

    2120   2125   2130

His Thr Val Glu Thr Ala Thr Ser Pro Thr Asp Ala Ser Ile Pro
   2135   2140   2145

Ala Ser Pro Glu Trp Lys Arg Glu Ser Glu Ser Thr Ala Ala Asp
   2150   2155   2160

Gln Glu Val Cys Glu Glu Gly Trp Asn Lys Tyr Gln Gly His Cys
   2165   2170   2175

Tyr Arg His Phe Pro Asp Arg Glu Thr Trp Val Asp Ala Glu Arg
   2180   2185   2190

Arg Cys Arg Glu Gln Gln Ser His Leu Ser Ser Ile Val Thr Pro
   2195   2200   2205

Glu Glu Gln Glu Phe Val Asn Asn Asn Ala Gln Asp Tyr Gln Trp
   2210   2215   2220

Ile Gly Leu Asn Asp Arg Thr Ile Glu Gly Asp Phe Arg Trp Ser
   2225   2230   2235

Asp Gly His Pro Met Gln Phe Glu Asn Trp Arg Pro Asn Gln Pro
   2240   2245   2250

Asp Asn Phe Phe Ala Ala Gly Glu Asp Cys Val Val Met Ile Trp

```
       2255                    2260                    2265


His Glu  Lys Gly Glu Trp Asn  Asp Val Pro Cys Asn  Tyr His Leu
    2270                    2275                    2280


Pro Phe  Thr Cys Lys Lys Gly  Thr Ala Thr Thr Tyr  Lys Arg Arg
    2285                    2290                    2295


Leu Gln  Lys Arg Ser Ser Arg  His Pro Arg Arg Ser  Arg Pro Ser
    2300                    2305                    2310


Thr Ala  His
    2315



<210>  21
<211>  1108
<212>  DNA
<213>  Homo sapiens



<220>
<221>  CDS
<222>  (143)..(1096)

<400>  21
gagtgagtga gagggcagag gaaatactca atctgtgcca ctcactgcct tgagcctgct     60


tcctcactcc aggactgcca gaggctcact cccttgagcc tgcttcctca ctccaggact     120


gccagaggaa gcaatcacca aa atg aag act gct tta att ttg ctc agc att     172
                        Met Lys Thr Ala Leu Ile Leu Leu Ser Ile
```

                              1   5   10

ttg gga atg gcc tgt gct ttc tca atg aaa aat ttg cat cga aga gtc   220
Leu Gly Met Ala Cys Ala Phe Ser Met Lys Asn Leu His Arg Arg Val
                15   20   25

aaa ata gag gat tct gaa gaa aat ggg gtc ttt aag tac agg cca cga   268
Lys Ile Glu Asp Ser Glu Glu Asn Gly Val Phe Lys Tyr Arg Pro Arg
                30   35   40

tat tat ctt tac aag cat gcc tac ttt tat cct cat tta aaa cga ttt   316
Tyr Tyr Leu Tyr Lys His Ala Tyr Phe Tyr Pro His Leu Lys Arg Phe
                45   50   55

cca gtt cag ggc agt agt gac tca tcc gaa gaa aat gga gat gac agt   364
Pro Val Gln Gly Ser Ser Asp Ser Ser Glu Glu Asn Gly Asp Asp Ser
                60   65   70

tca gaa gag gag gag gaa gaa gag gag act tca aat gaa gga gaa aac   412
Ser Glu Glu Glu Glu Glu Glu Glu Glu Thr Ser Asn Glu Gly Glu Asn
75   80   85   90

aat gaa gaa tcg aat gaa gat gaa gac tct gag gct gag aat acc aca   460
Asn Glu Glu Ser Asn Glu Asp Glu Asp Ser Glu Ala Glu Asn Thr Thr
                95   100   105

ctt tct gct aca aca ctg ggc tat gga gag gac gcc acg cct ggc aca   508
Leu Ser Ala Thr Thr Leu Gly Tyr Gly Glu Asp Ala Thr Pro Gly Thr
                110   115   120

ggg tat aca ggg tta gct gca atc cag ctt ccc aag aag gct ggg gat   556
Gly Tyr Thr Gly Leu Ala Ala Ile Gln Leu Pro Lys Lys Ala Gly Asp
                125   130   135

ata aca aac aaa gct aca aaa gag aag gaa agt gat gaa gaa gaa gag   604
Ile Thr Asn Lys Ala Thr Lys Glu Lys Glu Ser Asp Glu Glu Glu Glu

```
                140                    145                    150


        gag gaa gag gaa gga aat gaa aac gaa gaa agc gaa gca gaa gtg gat        652
        Glu Glu Glu Glu Gly Asn Glu Asn Glu Glu Ser Glu Ala Glu Val Asp
        155                    160                    165                    170


        gaa aac gaa caa ggc ata aac ggc acc agt acc aac agc aca gag gca        700
        Glu Asn Glu Gln Gly Ile Asn Gly Thr Ser Thr Asn Ser Thr Glu Ala
                            175                    180                    185


        gaa aac ggc aac ggc agc agc gga gga gac aat gga gaa gaa ggg gaa        748
        Glu Asn Gly Asn Gly Ser Ser Gly Gly Asp Asn Gly Glu Glu Gly Glu
                            190                    195                    200


        gaa gaa agt gtc act gga gcc aat gca gaa ggc acc aca gag acc gga        796
        Glu Glu Ser Val Thr Gly Ala Asn Ala Glu Gly Thr Thr Glu Thr Gly
                    205                    210                    215


        ggg cag ggc aag ggc acc tcg aag aca aca acc tct cca aat ggt ggg        844
        Gly Gln Gly Lys Gly Thr Ser Lys Thr Thr Thr Ser Pro Asn Gly Gly
                    220                    225                    230


        ttt gaa cct aca acc cca cca caa gtc tat aga acc act tcc cca cct        892
        Phe Glu Pro Thr Thr Pro Pro Gln Val Tyr Arg Thr Thr Ser Pro Pro
        235                    240                    245                    250


        ttt ggg aaa acc acc acc gtt gaa tac gag ggg gag tac gaa tac acg        940
        Phe Gly Lys Thr Thr Thr Val Glu Tyr Glu Gly Glu Tyr Glu Tyr Thr
                            255                    260                    265


        ggc gtc aat gaa tac gac aat gga tat gaa atc tat gaa agt gag aac        988
        Gly Val Asn Glu Tyr Asp Asn Gly Tyr Glu Ile Tyr Glu Ser Glu Asn
                            270                    275                    280


        ggg gaa cct cgt ggg gac aat tac cga gcc tat gaa gat gag tac agc        1036
        Gly Glu Pro Arg Gly Asp Asn Tyr Arg Ala Tyr Glu Asp Glu Tyr Ser
```

```
                285                    290                    295

tac ttt aaa gga caa ggc tac gat ggc tat gat ggt cag aat tac tac        1084
Tyr Phe Lys Gly Gln Gly Tyr Asp Gly Tyr Asp Gly Gln Asn Tyr Tyr
        300                    305                    310

cac cac cag tga agctccagcc tg                                          1108
His His Gln
315
```

```
<210> 22
<211> 317
<212> PRT
<213> Homo sapiens


<400> 22


Met Lys Thr Ala Leu Ile Leu Leu Ser Ile Leu Gly Met Ala Cys Ala
1               5                   10                  15



Phe Ser Met Lys Asn Leu His Arg Arg Val Lys Ile Glu Asp Ser Glu
            20                  25                  30



Glu Asn Gly Val Phe Lys Tyr Arg Pro Arg Tyr Tyr Leu Tyr Lys His
            35                  40                  45



Ala Tyr Phe Tyr Pro His Leu Lys Arg Phe Pro Val Gln Gly Ser Ser
        50                  55                  60



Asp Ser Ser Glu Glu Asn Gly Asp Asp Ser Ser Glu Glu Glu Glu Glu
65                  70                  75                  80
```

Glu Glu Glu Thr Ser Asn Glu Gly Glu Asn Asn Glu Glu Ser Asn Glu
              85   90   95

Asp Glu Asp Ser Glu Ala Glu Asn Thr Thr Leu Ser Ala Thr Thr Leu
              100   105   110

Gly Tyr Gly Glu Asp Ala Thr Pro Gly Thr Gly Tyr Thr Gly Leu Ala
              115   120   125

Ala Ile Gln Leu Pro Lys Lys Ala Gly Asp Ile Thr Asn Lys Ala Thr
              130   135   140

Lys Glu Lys Glu Ser Asp Glu Glu Glu Glu Glu Glu Glu Glu Gly Asn
145   150   155   160

Glu Asn Glu Glu Ser Glu Ala Glu Val Asp Glu Asn Glu Gln Gly Ile
              165   170   175

Asn Gly Thr Ser Thr Asn Ser Thr Glu Ala Glu Asn Gly Asn Gly Ser
              180   185   190

Ser Gly Gly Asp Asn Gly Glu Glu Gly Glu Glu Glu Ser Val Thr Gly
              195   200   205

Ala Asn Ala Glu Gly Thr Thr Glu Thr Gly Gly Gln Gly Lys Gly Thr
              210   215   220

Ser Lys Thr Thr Thr Ser Pro Asn Gly Gly Phe Glu Pro Thr Thr Pro
225   230   235   240

Pro Gln Val Tyr Arg Thr Thr Ser Pro Pro Phe Gly Lys Thr Thr Thr
             245   250   255

Val Glu Tyr Glu Gly Glu Tyr Glu Tyr Thr Gly Val Asn Glu Tyr Asp
          260   265   270

Asn Gly Tyr Glu Ile Tyr Glu Ser Glu Asn Gly Glu Pro Arg Gly Asp
          275   280   285

Asn Tyr Arg Ala Tyr Glu Asp Glu Tyr Ser Tyr Phe Lys Gly Gln Gly
          290   295   300

Tyr Asp Gly Tyr Asp Gly Gln Asn Tyr Tyr His His Gln
305   310   315

<210> 23
<211> 498
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (19)..(321)

<400> 23

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cgcagccacc gagacacc atg aga gcc ctc aca ctc ctc gcc cta ttg gcc        51
                     Met Arg Ala Leu Thr Leu Leu Ala Leu Leu Ala
                      1               5                  10

ctg gcc gca ctt tgc atc gct ggc cag gca ggt gcg aag ccc agc ggt        99
Leu Ala Ala Leu Cys Ile Ala Gly Gln Ala Gly Ala Lys Pro Ser Gly
                 15              20              25

gca gag tcc agc aaa ggt gca gcc ttt gtg tcc aag cag gag ggc agc       147
Ala Glu Ser Ser Lys Gly Ala Ala Phe Val Ser Lys Gln Glu Gly Ser
             30              35              40

gag gta gtg aag aga ccc agg cgc tac ctg tat caa tgg ctg gga gcc       195
Glu Val Val Lys Arg Pro Arg Arg Tyr Leu Tyr Gln Trp Leu Gly Ala
         45              50              55

cca gtc ccc tac ccg gat ccc ctg gag ccc agg agg gag gtg tgt gag       243
Pro Val Pro Tyr Pro Asp Pro Leu Glu Pro Arg Arg Glu Val Cys Glu
60              65              70              75

ctc aat ccg gac tgt gac gag ttg gct gac cac atc ggc ttt cag gag       291
Leu Asn Pro Asp Cys Asp Glu Leu Ala Asp His Ile Gly Phe Gln Glu
                 80              85              90

gcc tat cgg cgc ttc tac ggc ccg gtc tag ggtgtcgctc tgctggcctg         341
Ala Tyr Arg Arg Phe Tyr Gly Pro Val
                 95              100

gccggcaacc ccagttctgc tcctctccag gcaccttct ttcctcttcc ccttgccctt      401

gccctgacct cccagcccta tggatgtggg gtccccatca tcccagctgc tcccaaataa      461

actccagaag aggaatctga aaaaaaaaaa aaaaaaa                               498
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<210> 24
<211> 100
<212> PRT
<213> Homo sapiens

<400> 24

Met Arg Ala Leu Thr Leu Leu Ala Leu Leu Ala Leu Ala Ala Leu Cys
1   5   10   15

Ile Ala Gly Gln Ala Gly Ala Lys Pro Ser Gly Ala Glu Ser Ser Lys
            20   25   30

Gly Ala Ala Phe Val Ser Lys Gln Glu Gly Ser Glu Val Val Lys Arg
            35   40   45

Pro Arg Arg Tyr Leu Tyr Gln Trp Leu Gly Ala Pro Val Pro Tyr Pro
        50   55   60

Asp Pro Leu Glu Pro Arg Arg Glu Val Cys Glu Leu Asn Pro Asp Cys
65   70   75   80

Asp Glu Leu Ala Asp His Ile Gly Phe Gln Glu Ala Tyr Arg Arg Phe
                85   90   95

Tyr Gly Pro Val
            100

<210> 25

<211> 2383
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (320)..(1825)

<400> 25
ctccttcaag ccctcagtca gttgtgcagg agaaaggggg cggttggctt tctcctttca   60

agaacgagtt attttcagct gctgactgga gacggtgcac gtctggatac gagagcattt   120

ccactatggg actggataca aacacacacc cggcagactt caagagtctc agactgagga   180

gaaagccttt ccttctgctg ctactgctgc tgccgctgct tttgaaagtc cactcctttc   240

atggtttttc ctgccaaacc agaggcacct ttgctgctgc cgctgttctc tttggtgtca   300

ttcagcggct ggccagagg atg aga ctc ccc aaa ctc ctc act ttc ttg ctt   352
                      Met Arg Leu Pro Lys Leu Leu Thr Phe Leu Leu
                       1   5   10

tgg tac ctg gct tgg ctg gac ctg gaa ttc atc tgc act gtg ttg ggt   400
Trp Tyr Leu Ala Trp Leu Asp Leu Glu Phe Ile Cys Thr Val Leu Gly
              15   20   25

gcc cct gac ttg ggc cag aga ccc cag ggg acc agg cca gga ttg gcc   448
Ala Pro Asp Leu Gly Gln Arg Pro Gln Gly Thr Arg Pro Gly Leu Ala
          30   35   40

aaa gca gag gcc aag gag agg ccc ccc ctg gcc cgg aac gtc ttc agg   496
Lys Ala Glu Ala Lys Glu Arg Pro Pro Leu Ala Arg Asn Val Phe Arg
      45   50   55

```
cca ggg ggt cac agc tat ggt ggg ggg gcc acc aat gcc aat gcc agg        544
Pro Gly Gly His Ser Tyr Gly Gly Gly Ala Thr Asn Ala Asn Ala Arg
60              65              70              75

gca aag gga ggc acc ggg cag aca gga ggc ctg aca cag ccc aag aag        592
Ala Lys Gly Gly Thr Gly Gln Thr Gly Gly Leu Thr Gln Pro Lys Lys
            80              85              90

gat gaa ccc aaa aag ctg ccc ccc aga ccg ggc ggc cct gaa ccc aag        640
Asp Glu Pro Lys Lys Leu Pro Pro Arg Pro Gly Gly Pro Glu Pro Lys
            95              100             105

cca gga cac cct ccc caa aca agg cag gct aca gcc cgg act gtg acc        688
Pro Gly His Pro Pro Gln Thr Arg Gln Ala Thr Ala Arg Thr Val Thr
        110             115             120

cca aaa gga cag ctt ccc gga ggc aag gca ccc cca aaa gca gga tct        736
Pro Lys Gly Gln Leu Pro Gly Gly Lys Ala Pro Pro Lys Ala Gly Ser
    125             130             135

gtc ccc agc tcc ttc ctg ctg aag aag gcc agg gag ccc ggg ccc cca        784
Val Pro Ser Ser Phe Leu Leu Lys Lys Ala Arg Glu Pro Gly Pro Pro
140             145             150             155

cga gag ccc aag gag ccg ttt cgc cca ccc ccc atc aca ccc cac gag        832
Arg Glu Pro Lys Glu Pro Phe Arg Pro Pro Pro Ile Thr Pro His Glu
            160             165             170

tac atg ctc tcg ctg tac agg acg ctg tcc gat gct gac aga aag gga        880
Tyr Met Leu Ser Leu Tyr Arg Thr Leu Ser Asp Ala Asp Arg Lys Gly
            175             180             185

ggc aac agc agc gtg aag ttg gag gct ggc ctg gcc aac acc atc acc        928
Gly Asn Ser Ser Val Lys Leu Glu Ala Gly Leu Ala Asn Thr Ile Thr
            190             195             200
```

```
agc ttt att gac aaa ggg caa gat gac cga ggt ccc gtg gtc agg aag        976
Ser Phe Ile Asp Lys Gly Gln Asp Asp Arg Gly Pro Val Val Arg Lys .
    205               210               215


cag agg tac gtg ttt gac att agt gcc ctg gag aag gat ggg ctg ctg  .    1024
Gln Arg Tyr Val Phe Asp Ile Ser Ala Leu Glu Lys Asp Gly Leu Leu
220               225               230               235


ggg gcc gag ctg cgg atc ttg cgg aag aag ccc tcg gac acg gcc aag  ·    1072
Gly Ala Glu Leu Arg Ile Leu Arg Lys Lys Pro Ser Asp Thr Ala Lys
              240               245               250


cca gcg gcc ccc gga ggc ggg cgg gct gcc cag ctg aag ctg tcc agc       1120
Pro Ala Ala Pro Gly Gly Gly Arg Ala Ala Gln Leu Lys Leu Ser Ser
              255               260               265


tgc ccc agc ggc cgg cag ccg gcc tcc ttg ctg gat gtg cgc tcc gtg       1168
Cys Pro Ser Gly Arg Gln Pro Ala Ser Leu Leu Asp Val Arg Ser Val
        270               275               280


cca ggc ctg gac gga tct ggc tgg gag gtg ttc gac atc tgg aag ctc       1216
Pro Gly Leu Asp Gly Ser Gly Trp Glu Val Phe Asp Ile Trp Lys Leu
        285               290               295


ttc cga aac ttt aag aac tcg gcc cag ctg tgc ctg gag ctg gag gcc       1264
Phe Arg Asn Phe Lys Asn Ser Ala Gln Leu Cys Leu Glu Leu Glu Ala
300               305               310               315


tgg gaa cgg ggc agg gcc gtg gac ctc cgt ggc ctg ggc ttc gac cgc       1312
Trp Glu Arg Gly Arg Ala Val Asp Leu Arg Gly Leu Gly Phe Asp Arg
              320               325               330


gcc gcc cgg cag gtc cac gag aag gcc ctg ttc ctg gtg ttt ggc cgc       1360
Ala Ala Arg Gln Val His Glu Lys Ala Leu Phe Leu Val Phe Gly Arg
              335               340               345
```

```
acc aag aaa cgg gac ctg ttc ttt aat gag att aag gcc cgc tct ggc        1408
Thr Lys Lys Arg Asp Leu Phe Phe Asn Glu Ile Lys Ala Arg Ser Gly
        350                 355                 360


cag gac gat aag acc gtg tat gag tac ctg ttc agc cag cgg cga aaa        1456
Gln Asp Asp Lys Thr Val Tyr Glu Tyr Leu Phe Ser Gln Arg Arg Lys
        365                 370                 375


cgg cgg gcc cca ctg gcc act cgc cag ggc aag cga ccc agc aag aac        1504
Arg Arg Ala Pro Leu Ala Thr Arg Gln Gly Lys Arg Pro Ser Lys Asn
380                 385                 390                 395


ctt aag gct cgc tgc agt cgg aag gca ctg cat gtc aac ttc aag gac        1552
Leu Lys Ala Arg Cys Ser Arg Lys Ala Leu His Val Asn Phe Lys Asp
                400                 405                 410


atg ggc tgg gac gac tgg atc atc gca ccc ctt gag tac gag gct ttc        1600
Met Gly Trp Asp Asp Trp Ile Ile Ala Pro Leu Glu Tyr Glu Ala Phe
                415                 420                 425


cac tgc gag ggg ctg tgc gag ttc cca ttg cgc tcc cac ctg gag ccc        1648
His Cys Glu Gly Leu Cys Glu Phe Pro Leu Arg Ser His Leu Glu Pro
                430                 435                 440


acg aat cat gca gtc atc cag acc ctg atg aac tcc atg gac ccc gag        1696
Thr Asn His Ala Val Ile Gln Thr Leu Met Asn Ser Met Asp Pro Glu
        445                 450                 455


tcc aca cca ccc acc tgc tgt gtg ccc acg cgg ctg agt ccc atc agc        1744
Ser Thr Pro Pro Thr Cys Cys Val Pro Thr Arg Leu Ser Pro Ile Ser
460                 465                 470                 475


atc ctc ttc att gac tct gcc aac aac gtg gtg tat aag cag tat gag        1792
Ile Leu Phe Ile Asp Ser Ala Asn Asn Val Val Tyr Lys Gln Tyr Glu
                480                 485                 490
```

gac atg gtc gtg gag tcg tgt ggc tgc agg tag cagcactggc cctctgtctt   1845
Asp Met Val Val Glu Ser Cys Gly Cys Arg
                495   500

cctgggtggc acatcccaag agccccttcc tgcactcctg gaatcacaga ggggtcagga.   1905

agctgtggca ggagcatcta cacagcttgg gtgaaagggg attccaataa gcttgctcgc   1965

tctctgagtg tgacttgggc taaaggcccc cttttatcca caagttcccc tggctgagga   2025

ttgctgcccg tctgctgatg tgaccagtgg caggcacagg tccagggaga cagactctga.   2085

atgggactga gtcccaggaa acagtgcttt ccgatgagac tcagcccacc atttctcctc   2145

acctgggcct tctcagcctc tggactctcc taagcacctc tcaggagagc cacaggtgcc   2205

actgcctcct caaatcacat ttgtgcctgg tgacttcctg tccctgggac agttgagaag   2265

ctgactgggc aagagtggga gagaagagga gagggcttgg atagagttga ggagtgtgag   2325

gctgttagac tgttagattt aaatgtatat tgatgagata aaaagcaaaa ctgtgcct   2383

<210> 26
<211> 501
<212> PRT
<213> Homo sapiens

<400> 26

Met Arg Leu Pro Lys Leu Leu Thr Phe Leu Leu Trp Tyr Leu Ala Trp
1   5   10   15

Leu Asp Leu Glu Phe Ile Cys Thr Val Leu Gly Ala Pro Asp Leu Gly
                20   25   30

Gln Arg Pro Gln Gly Thr Arg Pro Gly Leu Ala Lys Ala Glu Ala Lys
       35   40   45

Glu Arg Pro Pro Leu Ala Arg Asn Val Phe Arg Pro Gly Gly His Ser
       50   55   60

Tyr Gly Gly Gly Ala Thr Asn Ala Asn Ala Arg Ala Lys Gly Gly Thr
65   70   75   80

Gly Gln Thr Gly Gly Leu Thr Gln Pro Lys Lys Asp Glu Pro Lys Lys
                   85   90   95

Leu Pro Pro Arg Pro Gly Gly Pro Glu Pro Lys Pro Gly His Pro Pro
                   100   105   110

Gln Thr Arg Gln Ala Thr Ala Arg Thr Val Thr Pro Lys Gly Gln Leu
           115   120   125

Pro Gly Gly Lys Ala Pro Pro Lys Ala Gly Ser Val Pro Ser Ser Phe
       130   135   140

Leu Leu Lys Lys Ala Arg Glu Pro Gly Pro Pro Arg Glu Pro Lys Glu
145   150   155   160

Pro Phe Arg Pro Pro Pro Ile Thr Pro His Glu Tyr Met Leu Ser Leu
                   165   170   175

Tyr Arg Thr Leu Ser Asp Ala Asp Arg Lys Gly Gly Asn Ser Ser Val
            180   185   190

Lys Leu Glu Ala Gly Leu Ala Asn Thr Ile Thr Ser Phe Ile Asp Lys
            195   200   205

Gly Gln Asp Asp Arg Gly Pro Val Val Arg Lys Gln Arg Tyr Val Phe
            210   215   220

Asp Ile Ser Ala Leu Glu Lys Asp Gly Leu Leu Gly Ala Glu Leu Arg
225   230   235   240

Ile Leu Arg Lys Lys Pro Ser Asp Thr Ala Lys Pro Ala Ala Pro Gly
                    245   250   255

Gly Gly Arg Ala Ala Gln Leu Lys Leu Ser Ser Cys Pro Ser Gly Arg
            260   265   270

Gln Pro Ala Ser Leu Leu Asp Val Arg Ser Val Pro Gly Leu Asp Gly
            275   280   285

Ser Gly Trp Glu Val Phe Asp Ile Trp Lys Leu Phe Arg Asn Phe Lys
            290   295   300

Asn Ser Ala Gln Leu Cys Leu Glu Leu Glu Ala Trp Glu Arg Gly Arg
305   310   315   320

Ala Val Asp Leu Arg Gly Leu Gly Phe Asp Arg Ala Ala Arg Gln Val
                325   330   335

His Glu Lys Ala Leu Phe Leu Val Phe Gly Arg Thr Lys Lys Arg Asp
                340   345   350

Leu Phe Phe Asn Glu Ile Lys Ala Arg Ser Gly Gln Asp Asp Lys Thr
                355   360   365

Val Tyr Glu Tyr Leu Phe Ser Gln Arg Arg Lys Arg Arg Ala Pro Leu
                370   375   380

Ala Thr Arg Gln Gly Lys Arg Pro Ser Lys Asn Leu Lys Ala Arg Cys
385   390   395   400

Ser Arg Lys Ala Leu His Val Asn Phe Lys Asp Met Gly Trp Asp Asp
                405   410   415

Trp Ile Ile Ala Pro Leu Glu Tyr Glu Ala Phe His Cys Glu Gly Leu
                420   425   430

Cys Glu Phe Pro Leu Arg Ser His Leu Glu Pro Thr Asn His Ala Val
                435   440   445

Ile Gln Thr Leu Met Asn Ser Met Asp Pro Glu Ser Thr Pro Pro Thr
                450   455   460

```
Cys Cys Val Pro Thr Arg Leu Ser Pro Ile Ser Ile Leu Phe Ile Asp
465             470         475             480


Ser Ala Asn Asn Val Val Tyr Lys Gln Tyr Glu Asp Met Val Val Glu
            485             490             495


Ser Cys Gly Cys Arg
            500



<210>  27
<211>  1378
<212>  DNA
<213>  Homo sapiens



<220>
<221>  CDS
<222>  (276)..(1130)


<400>  27
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cgccggccgt tccgtgtcca gaacctcccc tactcctccg ccttctcttc cttggccgcc     120

caccgccaag ttccgactcc ggttttcgcc tttgcaaagc ctaaggagga ggttaggaac     180

agccgcgccc ccctccctgc ggccgccgcc ccctgcctct cggctctgct ccctgccgcg     240

tgcgcctggg ccgtgcgccc cggcaggcgc cagcc atg tcg atg ctg ccg tcg      293
                                        Met Ser Met Leu Pro Ser
                                          1               5
```

```
ttt ggc ttt acg cag gag caa gtg gcg tgc gtg tgc gag gtt ctg cag      341
Phe Gly Phe Thr Gln Glu Gln Val Ala Cys Val Cys Glu Val Leu Gln
              10              15              20


caa ggc gga aac ctg gag cgc ctg ggc agg ttc ctg tgg tca ctg ccc      389
Gln Gly Gly Asn Leu Glu Arg Leu Gly Arg Phe Leu Trp Ser Leu Pro
              25              30              35


gcc tgc gac cac ctg cac aag aac gag agc gta ctc aag gcc aag gcg      437
Ala Cys Asp His Leu His Lys Asn Glu Ser Val Leu Lys Ala Lys Ala
              40              45              50


gtg gtc gcc ttc cac cgc ggc aac ttc cgt gag ctc tac aag atc ctg      485
Val Val Ala Phe His Arg Gly Asn Phe Arg Glu Leu Tyr Lys Ile Leu
55              60              65              70


gag agc cac cag ttc tcg cct cac aac cac ccc aaa ctg cag caa ctg      533
Glu Ser His Gln Phe Ser Pro His Asn His Pro Lys Leu Gln Gln Leu
              75              80              85


tgg ctg aag gcg cat tac gtg gag gcc gag aag ctg cgc ggc cga ccc      581
Trp Leu Lys Ala His Tyr Val Glu Ala Glu Lys Leu Arg Gly Arg Pro
              90              95              100


ctg ggc gcc gtg ggc aaa tat cgg gtg cgc cga aaa ttt cca ctg ccg      629
Leu Gly Ala Val Gly Lys Tyr Arg Val Arg Arg Lys Phe Pro Leu Pro
              105             110             115


cgc acc atc tgg gac ggc gag gag acc agc tac tgc ttc aag gag aag      677
Arg Thr Ile Trp Asp Gly Glu Glu Thr Ser Tyr Cys Phe Lys Glu Lys
              120             125             130


tcg agg ggt gtc ctg cgg gag tgg tac gcg cac aat ccc tac cca tcg      725
Ser Arg Gly Val Leu Arg Glu Trp Tyr Ala His Asn Pro Tyr Pro Ser
135             140             145             150
```

```
ccg cgt gag aag cgg gag ctg gcc gag gcc acc ggc ctc acc acc acc     773
Pro Arg Glu Lys Arg Glu Leu Ala Glu Ala Thr Gly Leu Thr Thr Thr
            155                 160                 165


cag gtc agc aac tgg ttt aag aac cgg agg caa aga gac cgg gcc gcg     821
Gln Val Ser Asn Trp Phe Lys Asn Arg Arg Gln Arg Asp Arg Ala Ala
            170                 175                 180


gag gcc aag gaa agg gag aac acc gaa aac aat aac tcc tcc tcc aac     869
Glu Ala Lys Glu Arg Glu Asn Thr Glu Asn Asn Asn Ser Ser Ser Asn
            185                 190                 195


aag cag aac caa ctc tct cct ctg gaa ggg ggc aag ccg ctc atg tcc    917
Lys Gln Asn Gln Leu Ser Pro Leu Glu Gly Gly Lys Pro Leu Met Ser
            200             205             210


agc tca gaa gag gaa ttc tca cct ccc caa agt cca gac cag aac tcg    965
Ser Ser Glu Glu Glu Phe Ser Pro Pro Gln Ser Pro Asp Gln Asn Ser
215                 220             225                 230


gtc ctt ctg ctg cag ggc aat atg ggc cac gcc agg agc tca aac tat   1013
Val Leu Leu Leu Gln Gly Asn Met Gly His Ala Arg Ser Ser Asn Tyr
                235                 240             245


tct ctc ccg ggc tta aca gcc tcg cag ccc agt cac ggc ctg cag acc   1061
Ser Leu Pro Gly Leu Thr Ala Ser Gln Pro Ser His Gly Leu Gln Thr
            250                 255                 260


cac cag cat cag ctc caa gac tct ctg ctc ggc ccc ctc acc tcc agt   1109
His Gln His Gln Leu Gln Asp Ser Leu Leu Gly Pro Leu Thr Ser Ser
            265                 270                 275


ctg gtg gac ttg ggg tcc taa gtggggaggg actggggcct cgaagggatt      1160
Leu Val Asp Leu Gly Ser
            280
```

cctggagcag caaccactgc agcgactagg gacacttgta aatagaaatc aggaacattt 1220

ttgcagcttg tttctggagt tgtttgcgca taaaggaatg gtggactttc acaaatatct 1280

ttttaaaaat caaaaccaac agcgatctca agcttaatct cctcttctct ccaactcttt 1340

ccacttttgc attttccttc ccaatgcaga gatcaggg   1378

<210> 28
<211> 284
<212> PRT
<213> Homo sapiens

<400> 28

Met Ser Met Leu Pro Ser Phe Gly Phe Thr Gln Glu Gln Val Ala Cys
1   5   10   15

Val Cys Glu Val Leu Gln Gln Gly Gly Asn Leu Glu Arg Leu Gly Arg
            20   25   30

Phe Leu Trp Ser Leu Pro Ala Cys Asp His Leu His Lys Asn Glu Ser
            35   40   45

Val Leu Lys Ala Lys Ala Val Val Ala Phe His Arg Gly Asn Phe Arg
            50   55   60

Glu Leu Tyr Lys Ile Leu Glu Ser His Gln Phe Ser Pro His Asn His
65   70   75   80

Pro Lys Leu Gln Gln Leu Trp Leu Lys Ala His Tyr Val Glu Ala Glu
        85   90   95

Lys Leu Arg Gly Arg Pro Leu Gly Ala Val Gly Lys Tyr Arg Val Arg
      100   105   110

Arg Lys Phe Pro Leu Pro Arg Thr Ile Trp Asp Gly Glu Glu Thr Ser
      115   120   125

Tyr Cys Phe Lys Glu Lys Ser Arg Gly Val Leu Arg Glu Trp Tyr Ala
      130   135   140

His Asn Pro Tyr Pro Ser Pro Arg Glu Lys Arg Glu Leu Ala Glu Ala
145   150   155   160

Thr Gly Leu Thr Thr Thr Gln Val Ser Asn Trp Phe Lys Asn Arg Arg
      165   170   175

Gln Arg Asp Arg Ala Ala Glu Ala Lys Glu Arg Glu Asn Thr Glu Asn
      180   185   190

Asn Asn Ser Ser Ser Asn Lys Gln Asn Gln Leu Ser Pro Leu Glu Gly
      195   200   205

Gly Lys Pro Leu Met Ser Ser Ser Glu Glu Glu Phe Ser Pro Pro Gln
    210   215   220

Ser Pro Asp Gln Asn Ser Val Leu Leu Leu Gln Gly Asn Met Gly His
225   230   235   240

Ala Arg Ser Ser Asn Tyr Ser Leu Pro Gly Leu Thr Ala Ser Gln Pro
                    245   250   255

Ser His Gly Leu Gln Thr His Gln His Gln Leu Gln Asp Ser Leu Leu
                260   265   270

Gly Pro Leu Thr Ser Ser Leu Val Asp Leu Gly Ser
                275   280

<210> 29
<211> 2590
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (546)..(1112)

<220>
<221> CDS
<222> (2036)..(2071)

<400> 29
caggcgctgg cgcacatggg aggcaaagac agacagggtg cggtcaggca gcagggccag   60

ggcggctggg ttaactcagt tgtgccacgg agaaaacgg ggtggtgggt tcctcccctc   120

tcccgggggac ggggggcact gcagttttgg ggccctgagt aactacagcc cagaagcgac   180

ctcccagttc ctccgcatcc ccagagacgg aacgatgccc ccaaagacca gccccgcccc   240

ccccacccccc gccaaagcgt ggccacagaa ggccgaggga cgcggcgggc gctgctcgag   300

gagcctccgg gctgagaggg gcggggcgtg cgcgggggag gggccgggac gccgctataa   360

aggcgcagct cggggccccg ctccggcccg ggacgcacat gtgcgcgcga cgcccggcag   420

ctgccaccgc ggggcgcagc cgagacccccg cgcctcgccc cggccggccc gcgaggcccg   480

cggcggccgc aggaggcggc atgagcagcg cgcgacagag ctgacgccgc gccccgccg   540

```
gcccc atg tcc ttc gcc acg ctg cgc ccg gcg ccg ccg ggc cgc tac ctg    590
      Met Ser Phe Ala Thr Leu Arg Pro Ala Pro Pro Gly Arg Tyr Leu
      1           5                   10                  15

tac ccc gag gtg agc ccg ctg tcg gag gac gag gac cgc ggc agc gac    638
Tyr Pro Glu Val Ser Pro Leu Ser Glu Asp Glu Asp Arg Gly Ser Asp
                20                  25                  30

agc tcg ggc tcc gac gag aaa ccc tgt cgc gtg cac gcg gcg cgc tgc    686
Ser Ser Gly Ser Asp Glu Lys Pro Cys Arg Val His Ala Ala Arg Cys
            35                  40                  45

ggc ctc cag ggc gcc cgg cgg agg gcg ggg ggc cgg cgg gcc ggg ggc    734
Gly Leu Gln Gly Ala Arg Arg Arg Ala Gly Gly Arg Arg Ala Gly Gly
        50                  55                  60

ggg ggg cca ggg ggc cgg cca ggc cgt gag ccc cgg cag cgg cac acg    782
Gly Gly Pro Gly Gly Arg Pro Gly Arg Glu Pro Arg Gln Arg His Thr
    65                  70                  75

gcg aac gcg cgc gag cga gac cgc acc aac agc gtg aac acg gcc ttc    830
Ala Asn Ala Arg Glu Arg Asp Arg Thr Asn Ser Val Asn Thr Ala Phe
```

```
        80                      85                      90                      95

acg gcg ctg cgc acg ctg atc ccc acc gag ccc gcc gac cgc aag ctc        878
Thr Ala Leu Arg Thr Leu Ile Pro Thr Glu Pro Ala Asp Arg Lys Leu
                    100                     105                     110

tcc aag att gag acg ctg cgc ctg gcc tcc agc tac atc tcg cac ctg        926
Ser Lys Ile Glu Thr Leu Arg Leu Ala Ser Ser Tyr Ile Ser His Leu
                    115                     120                     125

ggc aac gtg ctg ctg gcg ggc gag gcc tgc ggc gac gga cag ccc tgc        974
Gly Asn Val Leu Leu Ala Gly Glu Ala Cys Gly Asp Gly Gln Pro Cys
                    130                     135                     140

cac tcc ggg ccc gcc ttc ttc cac gcg gcg cgc gcc ggc agc ccc ccg       1022
His Ser Gly Pro Ala Phe Phe His Ala Ala Arg Ala Gly Ser Pro Pro
                    145                     150                     155

ccg ccg ccc ccg ccg cct ccc gcc cgc gac ggc gag aac acc cag ccc       1070
Pro Pro Pro Pro Pro Pro Pro Ala Arg Asp Gly Glu Asn Thr Gln Pro
160                     165                     170                     175

aaa cag atc tgc acc ttc tgc ctc agc aac cag aga aag ttg               1112
Lys Gln Ile Cys Thr Phe Cys Leu Ser Asn Gln Arg Lys Leu
                    180                     185

gtgagcacgg gccgtggggc gccgagggg gcctccaacg cgcccctcag cccacacctg       1172

ccaggcagag gaggcgaggc cacacgggca gggctcccca acagggcaca ggcaggcaca      1232

cctgtaacac aggcctgccg ggggctgggg ccttctcctg gggctcctct cgagggcgtc      1292

cctaggacac tcggctccca gtggagtgtg gagtcccctg cagggagctg catgaggggt      1352

aagagctagg gatggccaaa ggggcccacc cagggcgggg aggctgggga gctggaccag      1412
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gccgctgcaa gcttcccttt tcagtaagtt gaaaggcgga gtgaaaacag ctgagttcag   1472

aaagtaagag gctgcaaggc aagagaggaa ggaccccggg ttcttagccc ctgcggccca   1532

gcactggctt aagccatctt gggcacctgc tgtccgtccc ccacctaggc cgcacaccaa.   1592

gacaccaggt cctgtagggc tgcccgagac gtgggccatg ggacacgaag gcagaggctg   1652

gcaggagatg tggggggctgg gggtgagggc ccctgcagga gacgctggcc agctgtgatt   1712

tacagctcct gctgtgcttg gtggcaccgg aaaagcaggg tgagcaggga gaaaatacgg.   1772

cacggctttt cccaatcccc atttcctctc cagacagcac gcgcgagctc ctggggcctg   1832

aacatctggg aaatttaatt ttacaatttc ggctgtgcag cagtatgctc ccctccccaa   .1892

aacgcttgag ggaagctggg gagagccggg aaggaggtgc cttggcgctg gccacctgag   1952

atggcaccca gcagggaggc cagagaggcg cagactggcg ctgggctctg ccggggcctg   2012

acactcctcc ctcccctctg cag agc aag gac cgc gac aga aag aca gcg att   2065
                          Ser Lys Asp Arg Asp Arg Lys Thr Ala Ile
                          190   195

cgc agt taggaggtgg ccggcagcag ccaggaggca gacgctgctg ggggaggtgg   2121
Arg Ser
200

acgcccgggg tgactgcaga cagcccccac cttggacctg agctgggcaa ggcccaccgc   2181

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Leu Gln Gly Ala Arg Arg Arg Ala Gly Gly Arg Arg Ala Gly Gly Gly
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Gly Pro Gly Gly Arg Pro Gly Arg Glu Pro Arg Gln Arg His Thr Ala
65   70   75   80

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        Lys Ile Glu Thr Leu Arg Leu Ala Ser Ser Tyr Ile Ser His Leu Gly
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        Asn Val Leu Leu Ala Gly Glu Ala Cys Gly Asp Gly Gln Pro Cys His
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        Ser Gly Pro Ala Phe Phe His Ala Ala Arg Ala Gly Ser Pro Pro Pro
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        Pro Pro Pro Pro Pro Pro Ala Arg Asp Gly Glu Asn Thr Gln Pro Lys
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        Gln Ile Cys Thr Phe Cys Leu Ser Asn Gln Arg Lys Leu Ser Lys Asp
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